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EXPLANATORY NOTES

OF

INCREASES, DECREASES, AND CHANGES IN LANGUAGES

IN THE BUDGET FOR THE

DEPARTMENT OF AGRICULTURE

FOR THE

FISCAL YEAR ENDING JUNE 30, 1936

AND OF

WORK DONE UNDER EACH OF THE APPROPRIATION ITEMS

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FOREST SERVICE

(a) GENERAL ADMINISTRATIVE EXPENSES

	Regular	P.W.A.	Total
Appropriation, 1932	$379,850 (a)	- - -	$379,850
Appropriation, 1933	365,950 (b)	- - -	365,950
Appropriation, 1934	334,945 (c)	19,592	354,537
Appropriation, 1935	282,189 (d)	10,275 (e) 110,370 (f)	402,834
Budget Estimate, 1936	358,300	- - -	358,300
Net Change, Budget 1936, compared with Appropriation, 1935 . . .	+ 76,111 (g)	-120,645	-44,534

(a) Includes $9,210 from Classification of Lands.

(b) Includes $13,370 from Classification of Lands.

(c) Includes $9,766 from Classification of Lands, but excludes $2,640 transferred to Department of Interior.

(d) Includes $10,355 from Classification of Lands, and $13,742 to cover salary adjustment for 1935 (to 95%) as follows: (1) $5,977 transferred from Bureau of Animal Industry, and (2) $7,765 from fund authorized by Sec. 21 (e) of Act of March 28, 1934.

(e) Includes $9,786 allotment of P.W.A. funds in lieu of regular funds, and $489 to cover salary adjustment for 1935 (to 95%) from fund authorized by Sec. 21 (e) of Act of March 28, 1934.

(f) Balance of P.W.A. allotment made in 1934.

(g) Increase of $76,111 compared with 1935 appropriation is an increase in working funds under regular appropriation. In 1935, however, there was available $120,645, the balance of an allotment made during the fiscal year 1934 from a total of $15,967,745 made available by the Federal Emergency Administration of Public Works for physical improvements, control of tree-destroying insects and diseases, and forestry research (shown in Budget schedules at the end of Forest Service under the heading "National Industrial Recovery, Agriculture, Forest Service"). Hence, the 1936 Budget contemplates a decrease of $44,534 in total working funds.

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or Decrease 5% Salary Restoration	Increase or Decrease Working Funds
Obligated:					
General Administration -					
Regular Fund.....	$271,296	$282,189	$358,300	(1)$14,231	+ 61,880(2)
P.W.A. Lieu Funds.	--	10,275	- -	- -	- 10,275
P.W.A. Emergency..	19,592	110,370	- -	- -	-110,370
Unobligated:					
Regular Fund salary reduction impoundment.....	14,155	- -	- -	- -	- -
Other legislative impoundment.....	13,403	---	- -	- -	- -
Other amounts unobligated.....	36,091	- -	- -	- -	- -
Total Regular Appropriation.....	334,945	282,189	358,300	+ 76,111	
Total P.W.A. Funds..	19,592	120,645	- -	-120,645	
Total Funds.....	354,537	402,834	358,300	- 44,534	

The increase of $76,111 in regular funds for 1936 includes:

(1) An increase of $14,231 for 5% salary restoration, 1936 (to 100%)

(2) An increase of $61,880 for general administration, consisting of $10,275 to replace P.W.A. funds utilized in lieu of regular funds in 1935 (including $489 for 5% salary adjustment for 1935), and an actual increase of $51,605 in working funds.

This is the minimum that will be required to provide for the regular year-long personnel of the Washington office for the fiscal year 1936. In fiscal year 1932 the amount provided for departmental services and expenses for General Administrative Expenses and Land Classification was $379,850. Since the advent of emergency funds, the regular appropriations have been reduced and it has been necessary to allow many regular positions to remain vacant. However, in order to carry the load, it has been necessary to employ additional persons under temporary appointments and pay them from emergency funds. With the discontinuance of emergency funds, it is necessary for 1936 to provide for permanent personnel in the regular appropriation on a scale nearly comparable to that which existed prior to the emergency programs. The discontinuance of emergency appropriations, particularly the Emergency Acquisition fund, will throw an additional burden on the regular personnel of the central office in the fiscal year 1936, and adequate provision should be made for the employment of personnel to carry this load.

This appropriation is used for salaries and expenses of employees in the Washington office engaged on general administrative and service - wide subtechnical activities pertaining to management of the National Forests and for general service activities.

For a number of years the Forest Service has recognized the need for holding the number of employees in the central office to the lowest possible minimum consistent with work demands. Thru constant effort in this field the number of employees in the Washington office has been reduced from 225 in 1920 to 186 in 1934. During this period the volume of work has steadily increased to the point where the present organization is severely taxed to carry on the work. This increase in volume is attributable to three main causes as follows: (1) Increased activities of the Forest Service. (2) Large Public Works and other emergency appropriations, and (3) The tendency towards centralization brought about by establishment of various coordinating and other services.

(b) PROTECTION AND ADMINISTRATION OF NATIONAL FORESTS

	Regular	P.W.A.	Total
Appropriation, 1932	$10,196,470(a)	- -	$10,196,470
Appropriation, 1933	8,514,344(b)	- -	8,514,344
Appropriation, 1934 , ...	7,553,828(c)	$7,508,976	$15,062,804
Appropriation, 1935	5,890,515(d)	5,343,187(e) 836,123(e)	12,069,825
Budget Estimate, 1936.	8,009,577	- -	8,009,577
Net change, Budget 1936, compared with appropriation, 1935	+2,119,062(f)	-6,179,310	- 4,060,248

(a) Includes the following amounts from subappropriations now combined with this appropriation: Aerial fire control, $50,000; Sanitation and Fire Prevention, $67,000; Planting, $250,000; Reconnaissance, $131,260; Improvements $2,359,200.

(b) Includes Aerial fire control, $25,000; Classification of Lands, $39,400; Sanitation and Fire Prevention, $67,000; Planting, $154,200; Reconnaissance, $77,860; Improvements, $1,019,640.

(c) Includes Aerial Fire Control, $24,900; Classification of Lands, $37,484; Sanitation and Fire Prevention, $65,000; Planting, $214,070; Reconnaissance, $68,410; Improvements, $987,084; Transferred to Fighting Forest Fires, $412,000.

(d) Includes $20,555 from Classification of Lands, and $251,607 to cover 5% salary adjustment for 1935 (to 95%) as follows: (1) $109,450 transferred from Bureau of Animal Industry; and (2) $142,157 from fund authorized by Sec. 21 (e) by Act of March 28, 1934.

(e) $5,343,187 is balance of an allotment for special projects made during the fiscal year 1934 from a total of $15,967,745 made available by the Federal Emergency Administration of Public Works for physical improvements, control of tree-destroying insects and diseases, and forestry research (shown in Budget schedules at the end of Forest Service under the heading "National Industrial Recovery, Agriculture, Forest Service"). $836,123 includes $804,029 P.W.A. funds, in lieu of regular funds in fiscal year 1935, and $32,094 to cover salary adjustment for 1935 (to 95%) from fund authorized by Sec. 21 (e) of Act of March 28, 1934.

(f) Increase of $2,119,062 compared with 1935 appropriation is an increase in working funds under regular appropriation. In 1935, however, there was available $6,179,310, the balance of an allotment made during the fiscal year 1934 from Public Works Administration. Hence the 1936 Budget contemplates a decrease of $4,060,248 in total working funds.

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease: 5% Salary Restoration	Increase or decrease: Working Funds
Permanent organization for administration and protection of National Forests, including for 1935 preliminary lumber code compliance inspection:					
Regular Funds.....	$5,663,560	$5,890,515	$7,159,274	$ 261,994	$+1,006,765(2)
P.W.A. Lieu funds...	- -	243,273	- -	- -	-243,273(2)
Planting on National Forests-					
Regular Funds.....	145,813	- -	400,000	5,728	+ 394,272(3)
P.W.A. Lieu Funds...	- -	158,526	- -	- -	- 158,526(3)
P.W.A. Emergency....	349,830	138,369	- -	- -	- 138,369
Tree Diseases and insects -					
Regular Funds.....	207,126	- -	228,410	9,470	+ 218,940(4)
P.W.A. Lieu Funds...	- -	218,940	- -	- -	- 218,940(4)
P.W.A. Emergency....	1,380,756	634,286	- -	- -	- 634,286
Timber Surveys -					
Regular Funds.....	15,000	- -	17,784	705	+ 17,079(5)
P.W.A. Lieu Funds...	- -	17,079	- -	- -	- 17,079(5)
P.W.A. Emergency....	170,654	77,596	- -	- -	- 77,596
Aerial Fire Control -					
Regular Funds.....	11,835	- -	12,561	37	+ 12,524(6)
P.W.A. Lieu Funds...	- -	12,524	- -	- -	- 12,524(6)
Range Surveys -					
Regular Funds.....	15,113	- -	19,641	779	+ 18,862(7)
P.W.A. Lieu Funds...	- -	18,862	- -	- -	- 18,862(7)
P.W.A. Emergency....	85,224	35,123	- -	- -	- 35,123

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or Decrease 5% Salary Restoration	Increase or Decrease Working Funds
Sanitation, Fire Prevention, and Recreational Development-					
Regular Funds.....	41,941	- -	20,352	300	+ 20,052(8)
P.W.A. Lieu Funds...	- -	20,052	- -	- -	- 20,052(8)
P.W.A. Emergency....	822,489	283,779	- -	- -	- 283,779
Maintenance and Construction of administration and protection improvements -					
Regular Funds.....	133,977	- -	151,555	4,688	+ 146,867(9)
P.W.A. Lieu Funds...	- -	146,867	- -	- -	- 146,867(9)
P.W.A. Emergency....	3,370,945	2,610,237	- -	- -	-2,610,237
Classification of Lands-					
Regular Funds.....	19,916	- -	- -	- -	- -
Timber Stand Improvement -					
P.W.A. Emergency....	1,122,126	1,075,843	- -	- -	-1,075,843
Revegetation of Forest Ranges -					
P.W.A. Emergency....	41,653	39,943	- -	- -	- 39,943
Erosion Control -					
P.W.A. Emergency....	272,793	173,831	- -	- -	- 173,831
Fish and Game Protection -					
P.W.A. Emergency....	86,865	83,321	- -	- -	- 83,321
Surveys -					
P.W.A. Emergency....	303,641	190,859	- -	- -	- 190,859
Total Obligations:					
Regular Funds.....	6,227,281	5,890,515	8,009,577	(1)283,701	+1,835,361
P.W.A. Lieu Funds...	- -	836,123	- -	- -	- 836,123
P.W.A. Emergency....	- -	5,343,187	- -	- -	-5,343,187
Unobligated:					
Regular Funds.....					
Saving impoundments	364,620	- -	- -	- -	- -
Other amounts unobligated.....	961,927	- -	- -	- -	- -
Total, regular appropriation.....	7,553,828	5,890,515	8,009,577	+2,119,062	
Total, P.W.A. Lieu Funds.....	- -	836,123	- -	- 836,123	
Total, P.W.A. Emergency.....	7,508,976	5,343,187	- -	-5,343,187	
Total, all Funds....	15,062,804	12,069,825	8,009,577	-4,060,248	

The increase of $2,119,062 in regular funds for 1936 includes:

(1) An increase of $283,701 for salary restoration, 1936 (to 100%).

(2) -(9) Increases aggregating $836,123 to replace with regular funds amounts for which P.W.A. money was utilized in lieu of regular funds in 1935, and an actual increase of $999,238, or a total increase of $1,835,361, as follows:

		Replacing P.W.A. lieu Funds	Additional Increase	Total Increase
(2)	For permanent organization for administration and protection of the national forests, etc...	$243,273	$673,492	$1,006,765
(3)	For planting on National Forests.....	158,526	235,746	394,272
(4)	For tree diseases and insects.....	218,940	- -	218,940
(5)	For timber surveys.....	17,079	- -	17,079
(6)	For aerial fire control...	12,524	- -	12,524
(7)	For range surveys	18,862	- -	18,862
(8)	For sanitation, fire prevention, and recreational development.....	20,052	- -	20,052
(9)	For maintenance and construction of administration and protection improvements.....	146,867	- -	146,867
	Total, (2)-(9).....	836,123	999,238	1,835,361

(2) The increase of $763,402 for the permanent organization for administration and protection of the national forests, is required to administer and protect the new forest areas which are now being acquired. By the beginning of the fiscal year 1936, the Forest Service will have an increased area of 6,537,000 acres over the area under administration at the beginning of the fiscal year 1935, for which no provision has yet been made. In this connection, it should be explained that when new purchase units are established the supervisors, rangers and other necessary forest personnel are paid from acquisition funds, (in this case the Emergency Acquisition fund) inasmuch as the time of these employees is spent exclusively on the acquisition activity. As lands are purchased and placed under administration the men in charge of purchase units spend more time on protection and administration of the areas and less time on acquisition. When the acquisition activity becomes of minor importance on these purchase units, the salaries and expenses of the employees in charge should be paid from regular appropriations. Another compelling reason for providing for the salaries and expenses of the men in charge of the new areas from regular funds is that the Emergency Acquisition fund will expire on June 30, 1935 and no provision is made for the acquisition activity in the Budget for 1936. The areas acquired must be protected and provision should be made in the regular appropriation act for the salaries and expenses of the personnel in charge.

In addition to the salaries and expenses of the men who transfer from acquisition to general activities, there is of course the necessity of employing additional guards, rangers and other personnel to properly administer the new areas.

(3) The increase of $235,746 for planting on national forests is explained as follows:

With 180,000,000 trees available in Forest Service nurseries for field planting in the fiscal year 1936, it will be necessary to expend the equivalent of $1,130,000 in labor and equipment. If ECW labor is available for planting work in an amount equivalent to that for the fiscal year 1935, it will be possible to materially reduce the amount of the regular appropriation from that originally asked. Due to the necessity for having the proper amount of moisture in the soil at the time of planting, the period over which planting can be done is restricted to about one month each in the spring and in the fall. With the very scattered location of the planting jobs it is impossible to accomplish all the planting work in such a restricted period from ECW camps alone; the ECW camps are so located that the men can not be made available at all points desired and it becomes necessary to supplement the job with other labor.

The Act of June 9, 1930 authorizes an appropriation of $400,000 for the fiscal year 1936. It is believed that this amount together with ECW labor will plant the major portion of the stock which has been grown in the nurseries. The planting of trees on the National Forests has proven one of the most productive projects on which to employ large numbers of men since the work is accomplished almost entirely by hand labor. It is a class of work which the most unskilled labor can do and requires the use of the simplest kind of tools. The National Forest tree planting work is intimately tied in with Forest Service plans for the employment of local labor dependent upon the National Forest for a large portion of its subsistence.

CHANGE IN LANGUAGE

For the administration, protection, and development of the National Forests, including the compensation and traveling expenses of field personnel; the purchase of materials, supplies and equipment; the establishment and maintenance of forest-tree-nurseries, including the procurement of tree seed and nursery stock by purchase, production or otherwise, seeding and tree planting and the care of plantations and young growth; the maintenance and operation of aerial fire control by contract or otherwise, but no including the purchase of landing fields or aircraft; the maintenance of roads and trails and the construction and maintenance of all other improvements necessary for the proper and economical administration, protection, development and use of the National forests: Provided, That where, in the opinion of the Secretary of Agriculture, direct purchases will be more economical

than construction, improvements may be purchased, the construction and maintenance of sanitary facilities and for fire preventive and other measures incident to recreational developments and use; control of destructive forest tree diseases and insects; timber cultural operations; development and application of fish and game management plans; propagation and transplanting of plants suitable for planting on semi-arid portions of the National forests; estimating and appraising of timber and other resources and development and application of plans for their effective management, sale and/or use; examination, classification, surveying and appraisal of land incident to effecting exchanges authorized by law and of lands within the boundaries of the National forests that may be opened to homestead settlement and entry under the Act of June 11, 1906 (U.S.C., Title 16, Sec. 506-509) and the Act of August 10, 1912 (U.S.C., Title 16, Sec. 506), as provided by the Act of March 4, 1913 (U.S.C., Title 16, Sec. 512), and all other expenses necessary for the use, maintenance, improvement, protection and general administration of the National forests and lands under contract for purchase or for the acquisition of which condemnation proceedings have been instituted under the Act of March 1, 1911 (U.S.C., Title 16, Sec. 521) and the Act of June 7, 1924 (U.S.C., Title 16, Secs. 471, 499, 505, 564-570).

The changes in language in this appropriation are recommended for the following reasons:

To present a more comprehensive understanding of national forest work by including within a single appropriation all allied activities which relate directly to the administration and protection of the national forests and which are recurrent on an annual basis, and to permit of the application of greater simplicity in fiscal and accounting procedure.

This consolidation of appropriation items dealing with the administration, protection, and development of the National Forests results in the elimination of the following items which have appeared in annual appropriation acts heretofore:

Aerial Fire Control
Classification of Lands
Sanitation and Fire Prevention
Planting, National Forests
Reconnaissance
Improvements, National Forests

The extensive changes in the language of this item are due to the bringing over of special provisions formerly carried in the above sub-items.

The new item, "National Forest Region 8", is brought about by creation, July 1, 1934, of a new and additional region from portions of old National Forest Region 7. This resulted in the redistribution of States between present national forest regions 7 and 8, as shown in the new language.

Special provision for the repair and maintenance of the dam at Cass Lake, Minnesota, National forest region 9, represents merely a transposition from the language formerly carried under the item for "Improvement of the National Forests".

A new number, "10", has been given to the National Forest Region in Alaska, due to the use of the number "8" to designate the new Region made effective July 1, 1934, as outlined above.

WORK DONE UNDER THIS APPROPRIATION

This appropriation includes all field activities relating to the administration, protection and development of the National Forests except the special appropriations covering the construction of roads and trails under the Federal Highway Act and the Act authorizing the expenditure of ten per cent of National Forest receipts for this purpose; the acquisition of additional forest lands under the Act of March 1, 1911; emergency expenditures for fire suppression; and expenditures from funds deposited to the credit of the Forest Service by counties, States, associations and individuals for fire prevention and suppression, brush disposal, construction and maintenance of improvements, and reforestation.

Project 1. Permanent organization for administration and protection of National Forests. This project includes the general operating expenses of the National Forest and National Forest Regional offices, such as:

a. Salaries and travel expenses of the men in charge of the various units of organization such as National Forest Regions, National Forests, and Ranger Districts. There are at present ten National Forest Regions and 146 National Forests, and it is estimated that there will be at least 770 ranger districts by July 1, 1935. These men manage the 170,000,000 acres (estimate as of July 1, 1935) involved and direct the administrative, technical, protective and improvement activities carried on in the units for which they are individually responsible.

b. Salaries and expenses of the assistants to these supervisory officers including the salaries of clerical employees.

c. Salaries of fire guards, scalers and other short-term employees. Some 3,500 fire guards are employed during the fire season as required by the fire danger prevailing in the National Forest regions. Periods of employment vary from one to six months and average about three months. When such work as building or fence maintenance or construction is needed at the station of a fire guard he is employed on such work if arrangements can be made so that he can be called by telephone when a fire is discovered. Also, if periods of wet weather occur during the fire season, fire guards are used as far as possible on any other work needed, such as improvement work of all kinds.

d. Fire protection equipment is purchased from this appropriation to the extent that funds can be made available therefrom.

e. Miscellaneous costs of operation such as rent of offices, telephone, and telegraph tolls, freight, express, supplies and equipment, etc.

Project 2. Planting on National Forests. This project includes the salaries and expenses of permanent and temporary employees engaged exclusively on nursery and field planting work, and the miscellaneous expenses relating to the project, such as costs of seed collection and extraction, purchase of fertilizers, supplies, materials and equipment, transportation of seedlings from nurseries to field planting sites, etc.

Planting on the National Forests is resorted to only where it is not possible to obtain regeneration naturally. In sales of National Forest timber provision is made for natural regeneration through the reservation of seed trees. Where fires have repeatedly burned over areas there is nothing left to furnish seed and as a result such areas grow up to a tangle of weeds, brush and light seeded tree species of low commercial value. Unless such areas are planted they will remain in this nonproductive condition for a long period of years.

There is much to be accomplished before the young plants can be furnished for the restocking of such devastated areas. Nursery sites must be provided, improvements including dwellings, storage sheds, extracting plants, water systems and cultivation machinery must be purchased and constructed, cones must be collected and the seeds extracted and cleaned, and the seed must be planted and the plants tented up to the time they are ready to be transplanted to the field. Care must be given the planting of each individual tree if it is to withstand the first three or four years battle to survive. Once established the trees grow rapidly and it is reasonably good risk that they will reach maturity. From 800 to 1200 trees are planted per acre so the job of furnishing planting stock for an annual program of 180,000 acres is a large undertaking and requires constant careful planning years in advance of each year's output. Through experience the technique of both nursery practice and field planting has improved and is resulting in lower total costs for reforestation.

Project 3. Tree disease and insect control on National Forests. White Pine Blister Rust. The white pine blister rust disease causes the development of large blisters, on the limbs and occasionally on the main stem of trees, which girdle the living tissue and cause the death of the stem or branch beyond the point of infection. Usually there are hundreds of infections on a single tree and it is only a question of time until the tree is killed. Trees of sapling or pole size are killed in a year or two while the older trees may live for a considerably longer period. The disease is controlled by removing its alternate hosts--currants and gooseberries--from the vicinity of the pines. The spores from blisters of an infected pine are long lived and the wind can carry them many miles. These

spores infect the underside of the leaves of the currants and gooseberries, and spores from these infections then infect the pines through the needles. The pines may be reinfected many times so that scarcely a single limb will escape infection. These last named spores are thin walled and short lived and ordinarily cannot travel more than 900 feet before drying up. Removing all currant and gooseberry bushes within a radius of 900 feet of the pines renders them immune from the disease. The removal of the currant and gooseberry bushes is therefore the key to control and is the control measure being followed. The currants and gooseberries are removed by hand pulling ordinarily, but along stream bottoms and in old burns they sometimes occur in such great numbers that hand pulling is impractical and it is necessary to resort to more drastic measures. The two common operations now in use under these conditions are poisoning by spraying chemicals with a backpack pumping outfit and by the use of a heavy road grader apparatus which instead of a solid blade has a tooth like appliance which lifts the plants from the ground; these are later piled and burned.

Insect Control. The principal tree killing insects which have to be combatted on the National Forests are bark beetles. Bark beetles kill the trees by destroying the cambium of growing tissue. The beetles occur in such numbers that the cambium is destroyed clear around the bole of the tree, which has the same effect as though the tree had been girdled. There are several species of these beetles, each showing a preference for a restricted number of tree species. The methods of control vary with the habits of the particular beetle and the species of tree infested. The mountain pine beetle which operates principally in Lodgpole pine and western white pine pupates in the cambium layer between the bark and the sapwood. When the infestation is in lodgepole pine this beetle can be controlled by spraying oil from back-pack pumps up along the bole of the tree, and then setting the tree on fire. By spraying additional oil after the fire is started the bark can be so scorched that the larvae or immature beetles underneath are killed. By killing the beetles before they emerge to lay their eggs under the bark of other trees the infestation is checked. In the case of western white pine, which has a thicker bark than lodgepole pine, the trees must be felled and the bark peeled off thus exposing the immature beetles to the elements or the trees must be bucked up into logs and the logs decked and burned. In contrast to the mountain pine beetle the western pine beetle which infests ponderosa pine, pupates in the bark of the tree thus necessitating the destruction of the bark. This is done by felling the trees and peeling off and burning the bark. Ponderosa pine trees are usually too large to permit of decking and burning the logs. When the trees are treated under the various control methods they are already doomed and would die whether treated or not, so that the mere act of control does not result in useless waste of timber.

Project 4. Timber surveys on National Forests. This project includes the salaries and expenses of the permanent and temporary employees assigned exclusively to this project. The first step in the management of the timber resources of the National Forests is the determination of the kinds and amount of timber available in the

different units. When this information is obtained it is possible to group together those units which are logically tributary to the same general lines of transportation which will carry the raw material to a common manufacturing center. Once the boundaries of such a unit of operation are decided upon and an inventory had of the merchantable timber and young growth therein, it is possible to determine the amount of timber which can be removed annually without depleting the growing stock or wood capital. All of this information is brought together in what is termed a forest management plan, and such a plan definitely fixes the annual cut and the timber sale policies and systems of cutting to be followed. A great many of these plans have been prepared and a great many more are needed. It is not possible to intelligently plan for future business, nor can the Forest Service properly encourage the investments of capital for the manufacture of its timber unless it rather definitely knows what it has to offer in the way of a permanent supply of raw material.

Project 5. Aerial Fire Control on National Forests. This appropriation is used to operate aircraft in California, Oregon, Washington, Idaho, Montana, Michigan, Minnesota, and Arkansas in forest fire protection work. Beginning with the fiscal year 1929 this activity was carried on by contracting with commercial flyers instead of in cooperation with the War Department. Contracts are negotiated with commercial flyers at the beginning of each fire season. These agreements require the contractor to furnish planes, personnel and equipment at stated rates per flying hour. Planes are called for by the Forest Service only when needed. In recent years contracts have been entered into at very reasonable rates and it has not been necessary to guarantee the contractor a minimum period of flying time to obtain favorable contracts.

Project 6. Range surveys on National Forests. This project includes the salaries and expenses of the permanent and temporary employees assigned exclusively to this project. Plans of management are prepared to govern the handling of the forage resources of the National Forests. The range is divided up into grazing allotments - units of a size to accomodate the stock of a single individual or a group of individuals. Each allotment has a plan of management prepared for it fixing the number of stock which can be grazed without reducing the productivity of the area. It provides for the manner in which the stock shall be grazed, the order in which the different units within the allotment shall be grazed as the season progresses, the location of the salt grounds and the supervision necessary to obtain the best utilization of the range.

Most of the grazing allotments at present have a plan of management of some nature but many of them are based on very incomplete information. In order that the best use of this grazing resource may be obtained it is essential that basic information be obtained by a grazing survey of the 20,000,000 acres still to be covered. These surveys determine the number and kinds of forage plants found per acre on the range, their palatability, period of seeding and such

related data and furnish a basis for determining the carrying capacity of the different units. Without this information it is simply a question of "trial and error" with the very serious probability of doing damage by over grazing which will require years to correct and further to seriously impair the watershed value of the grass cover.

Project 7. Sanitation and fire prevention and recreational development.

This project includes the following:

a. The clearing or otherwise preparing areas required as public camp grounds, and the installation thereon of simple water, sanitary and fire control facilities with a view (1) of concentrating campers upon areas of low sanitary and fire hazard, (2) preventing the occurrence of unsanitary conditions and (3) minimizing risk of fire damage to national forest timber. During the fiscal year 1936 it is anticipated that the funds allotted under this project heading will be used exclusively for the maintenance of existing camp grounds.

b. The employment of caretakers on a small percentage of the more heavily used camp grounds for policing the grounds and the removal of garbage and trash resulting from the heavy public use.

Project 8. Maintenance of administrative and protection improvements. This project includes the salaries and expenses of the temporary employees required to maintain telephone lines, fire breaks, lookout structures, dwellings, barns, etc. It also includes the supplies, materials and equipment needed for this purpose. These men will work under the direction of the men in charge of National Forests and Ranger Districts.

(c) FIGHTING FOREST FIRES

Appropriation, 1932	$4,360,000 (a)
Appropriation, 1933	1,100,000 (b)
Appropriation, 1934	512,000 (c)
Appropriation, 1935	100,000
Budget Estimate, 1936	100,000

(a) Includes $4,260,000 provided in First Deficiency Act, 1932.

(b) Includes $1,000,000 provided in First Deficiency Act, 1933.

(c) Includes unexpended balances of $350,000 transferred from Protection and Administration of the National Forests, and $62,000 from Improvements, National Forests (authorized by Deficiency Appropriation Act 1934).

PROJECT STATEMENT

	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease: 5% Salary Restoration	Increase or decrease: Working Funds
Obligated:					
Fire suppression..	$415,799	$33,000	$33,000	- -	- -
Protection of lands, railroads forfeiture suits.....	65,000	67,000	67,000	- -	- -
Total obligations	480,799	(*)100,000	100,000	- -	- -
Unobligated:					
Salary reduction impoundments.....	19,025	- -	- -	- -	- -
Other amounts unobligated.....	12,176	- -	- -	- -	- -
Total appropriation	512,000	(*)100,000	100,000	- - -	

(*) Regular appropriation only. Does not include 1935 fire fighting deficiency.

WORK DONE UNDER THIS APPROPRIATION

This appropriation is used primarily for the suppression of forest fires, with the exception of the amount required to give the lands known as the Coos Bay Wagon Road and Oregon and California railroad lands the same protection from fire which is given adjacent national forest or privately-owned lands protected by associations of private owners. Otherwise administrative restrictions placed upon the use of the appropriation by the Forest Service provide that expenditures shall not be made from it until forest fires have actually started. An exception is made to this rule, however, when fire conditions become so critical that the regular protective organization which is financed from "Protection and Administration, National Forests," is unable to cope with the situation and when, therefore, the temporary employment of additional guards clearly will reduce expenditures for fire fighting.

Expenditures are made for the employment of fire fighters and their transportation, equipment needed on going fires when not available in stocks of equipment previously purchased from the Protection and Administration appropriation or in connection with fires of previous years. The appropriation is used for travel expenses of forest guards when going to or returning from fires and for the travel expenses of regular employees of the Service when the travel performed extends beyond the boundaries of the units to which they are regularly assigned or when the activities to which men are assigned do not include fire fighting.

The amount appropriated ($100,000) is nominal because it is impossible to predict in advance what the expenditures for such an uncertain activity may be. Supplemental estimates are submitted each year for the Deficiency Bill to cover expenditures in excess of the amount appropriated in the regular appropriation Act.

(d) CLASSIFICATION OF LANDS

Appropriation, 1932	$58,980
Appropriation, 1933	52,770
Appropriation, 1934	47,250
Appropriation, 1935..	30,910
Budget Estimate, 1936	- -
Decrease, Budget 1936, compared with Appropriation, 1935	30,910

Note: - This item is being consolidated with the item for Protection and Administration of the National Forests in the Budget for 1936, and represents an apparent reduction of $30,910.

FOREST RESEARCH

(e) FOREST MANAGEMENT

	Regular	P.W.A.	Total
Appropriation, 1932	$562,000	- -	$562,000
Appropriation, 1933	534,280	- -	534,280
Appropriation, 1934	492,671	$41,072	533,743
Appropriation, 1935	411,152(a)	39,952	451,104
Budget Estimate, 1936 . . .	429,494	- -	429,494
Net Change, Budget 1936, compared with Appropriation, 1935 . . . . . +	18,342(b)	-39,952	- 21,610

(a) Includes $18,342 to cover salary adjustment for 1935 (to 95%) as follows: (1) $7,979 transferred from Bureau of Animal Industry; and (2) $10,363 from fund authorized by Section 21(e) of Act of March 28,1934.

(b) Increase of $18,342 compared with 1935 regular appropriation, represents 5% salary restoration, 1936 (to 100%). In 1935, however, there was available $451,104, consisting of the regular appropriation amounting to $411,152, plus $39,952, the balance of an allotment of $81,024 made during the fiscal year 1934 from a total of $15,967,745 made available by the Federal Emergency Administration of Public Works for physical improvements, control of tree-destroying insects and diseases, and forestry research (shown in Budget schedules at the end of Forest

Service under the heading "National Industrial Recovery, Agriculture, Forest Service"). Hence, the 1936 Budget contemplates a decrease of $21,610 in total working funds.

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease 5% Salary Restoration	Working Funds
Obligated;					
1. Allegheny Forest Experiment Station					
Regular Funds...	$20,807	$22,308	$ 23,353	$1,045	- - -
P.W.A. Funds....	2,438	2,372	- - -	- - -	-$2,372
2. Appalachian Station-					
Regular Funds....	31,922	34,298	35,921	1,623	- - -
P.W.A. Funds.....	2,215	2,156	- - -	- - -	- 2,156
3. California Station -					
Regular Funds....	42,193	45,477	47,282	1,805	- - -
P.W.A. Funds.....	5,875	5,715	- - -	- - -	- 5,715
4. Central States Station -					
Regular Funds....	22,098	23,438	24,478	1,040	- - -
P.W.A. Funds.....	3,309	3,217	- - -	- - -	- 3,217
5. Intermountain Station -					
Regular Funds....	5,141	7,068	7,391	323	- - -
P.W.A. Funds.....	3,540	3,445	- - -	- - -	- 3,445
6. Rocky Mountain region Station....	4,099	- - -	- - -	- - -	- - -
7. Lake States Station					
Regular Funds....	52,905	56,207	58,634	2,427	- - -
P.W.A. Funds.....	4,463	4,342	- - -	- - -	- 4,342
8. Northeastern Station -					
Regular Funds....	34,651	37,015	38,671	1,656	- - -
P.W.A. Funds.....	3,905	3,800	- - -	- - -	- 3,800
9. Northern Rocky Mountain Station -					
Regular Funds....	25,360	27,019	28,325	1,306	- - -
P.W.A. Funds.....	5,775	5,615	- - -	- - -	- 5,615
10 Pacific Northwest station -					
Regular Funds....	23,972	25,619	26,639	1,020	- - -
P.W.A. Funds.....	3,741	3,637	- - -	- - -	- 3,637
11. Southern Station -					
Regular Funds....	57,534	62,028	64,829	2,801	- - -
P.W.A. Funds.....	2,106	2,049	- - -	- - -	- 2,049
12. Southwestern Station -					
Regular Funds....	8,981	10,040	10,462	422	- - -
P.W.A. Funds.....	3,181	3,094	- - -	- - -	- 3,094

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or Decrease 5% Salary Restoration	Increase or Decrease Working Funds
Obligated, (Cont'd)					
13. Washington, D.C. -					
Regular Funds	54,661	60,635	63,509	2,874	- - -
P.W.A. Funds.....	524	510	- - -	- - -	- 510
Total Obligations:					
Regular Funds.....	384,324	411,152	429,494	(1)18,342	- - -
P.W.A. Funds.....	41,072	39,952	- - -	- - -	-39,952
Unobligated:					
Regular Funds:					
Salary reduction impoundments and vacancy savings...	19,379	- - -	- - -	- - -	- - -
Other amounts unobligated.....	88,968	- - -	- - -	- - -	- - -
Total, Regular Appropriations.....	492,671	411,152	429,494	+ 18,342 (1)	
Total, P.W.A.....	41,072	39,952	- - -	- 39,952	
Total, All Funds...	533,743	451,104	429,494	- 21,610	

(1) The increase of $18,342 in regular funds for 1936 is for 5% salary restoration on existing projects (to 100%).

WORK DONE UNDER THIS APPROPRIATION

The research carried under this appropriation is concerned with the problems of establishing and growing forest crops on forest land, regardless of ownership, and of protecting them from fire. Investigations are under way in all the important forest regions of the United States. In each region emphasis is being placed upon the most pressing and urgent problems. These investigations are basic to the successful practice of forestry.

They furnish basic information needed by all forestry agencies in carrying out various emergency as well as regular activities. They supply to the lumber, pulp, naval stores and other forest industries information needed to meet the conservation requirements established by the various codes and marketing agreements under the N.R.A. and the A.A.A., and have been of especial value in formulating rules of forest practice to be applied under Article X of the Lumber Code. They have developed methods being applied on a national scale by the C.C.C., in stand improvement, reforestation, hazard reduction and fire control. They have disclosed many of the fundamental principles bearing on the

location of lookouts, firebreaks, and roads and trails being constructed on the national forests and national parks under the Public Works Act. They are supplying data on reforestation and forest protection to the Tennessee Valley Authority. They are furnishing basic data on growth, forest management and naval stores practices to the Farm Credit Administration and the Reconstruction Finance Corporation.

These investigations also supply currently information needed in the management and protection of the national forests.

The work is being done under the authorization for research in forest management specified in Section 2 of the Act approved May 22, 1928, (45 Stat., 699-702).

Project 1. Allegheny Forest Experiment Station. Work at this station is concentrated on the three most important and valuable forest types of the region - the Allegheny hardwoods, the coastal plain pine, and the sprout-hardwoods. Work is concentrated on methods of management to obtain desirable natural reproduction of desirable species and on growth and yield, the two most pressing problems of the Allegheny region.

Project 2. Appalachian Forest Experiment Station. Research is concentrated on the two most important forest types, the mountain hardwoods and the coastal plain pine, in both of which Federal ownership, control, and management are assuming large proportions owing to public acquisitions, and to Tennessee Valley developments. Work under way includes studies of stand-improvement measures to convert stands deteriorated by past mismanagement and fire into productive stands of valuable hardwoods. It includes studies of growth and management of understocked loblolly pine which have followed destructive logging and fire in old stands. It includes studies of fire control methods and of ways of overcoming the damage caused by frequent light fires. Rules of forest practice incorporated in the Lumber Code for this region are based upon the work of this station.

Project 3. California Forest and Range Experiment Station. Investigations are being carried on in the three major forest types of the region; pine, redwoods, and chaparral. They deal with methods of artificial and natural reforestation and methods of management. They deal also with the control of fire. Denuded forest lands in California, both pine and redwood, are reforested with great difficulty either naturally or artificially because of the dense growth of brush and other vegetation which follows cutting and fire. Fire investigations have developed better methods of organization for fire control and better standards for detection and for prompt action upon fires. These investigations have established many basic principles of forest management, and protection which have been applied to the national forests and incorporated in the rules of forest practice established under the Lumber Code for the pine and the redwood regions.

Project 4. Central States Forest Experiment Station. Work at this station deals very largely with the problems of the farm-woodland owner. Special emphasis is placed upon the reforestation of submarginal

and waste agricultural land. The results are showing under what circumstances forest planting as a part of diversified agriculture is most successful and how the woodland should be handled in order to maintain its productivity. The recent establishment of national-forest areas in this region and the acquisition of forest lands by local public agencies lend additional significance to the work now being carried on..

Project 5. Intermountain Forest and Range Experiment Station. Research is confined exclusively to the valuable ponderosa pine type, which occupies the best forest lands in this region. The problem being studied is that of natural reproduction following cutting and is specifically tied in to the managment of the national forests.

Project 6. In the Rocky Mountain Region. Research in methods of cutting, natural reproduction and in allied fields related to national-forest development in this region, discontinued when appropriations reduced.

Project 7. Lake States Forest Experiment Station. Work here is largely concerned with the problems of restoring to productivity through forest planting and through stand improvement the millions of areas of denuded and barren forest lands and of impoverished forest. The increasing area of forest land devastated and returning to public ownership through abandonment and tax delinquency is creating a situation that can only be met through reforestation. In the northern plains region the need for dune control, the need for forests, and the need for shelter from winter winds emphasize the importance of determining how forests can be reestablished. Methods of organization for fire control are being developed. Recurrent fires on the restocking areas not only kill the developing new forest, but tend also to prevent later reestablishment of a forest cover. Facts are being put into practice currently on national forests, State and many private lands throughout the region.

Project 8. Northeastern Forest Experiment Station. Most of the work deals with reforestation, growth, management, and protection in spruce-hardwood, the most important commercial forest type of the region. Reforestation activities are pointing the way to overcoming failures in plantations. Stand improvement measures developed under this project are widely used by Federal, State and private interests. The work in forest-fire control has evolved practical measures of determining fire danger that are also in wide use. Rules of forest practices incorporated in the Lumber Code for the Northeast are largely based upon work by the Northeastern Station.

Project 9. Northern Rocky Mountain Forest and Range Experiment Station. The work deals with the very valuable western white pine type, and includes two main lines of work, fire protection and management. Disastrous fires are common. Results of current research indicate that through better organization of fire control forces involving relocations of lookouts and firemen and proper location of transportation systems, more efficient protection can be obtained often without increased cost. A technique has been developed whereby forest officers can themselves determine the local fire hazard. White pine management is very difficult because aggressive but poorer tree and worthless brush species prevent successful reproduction of pine following cutting or fire. Measures to

overcome this difficulty are being developed through studies of the requirements of the pine, and of cutting methods and stand-improvement. Results are currently put into practice on the national forests and on private lands through the operation of the Lumber Code.

Project 10. Pacific Northwest Forest Experiment Station. Work is in progress on the Douglas fir and ponderosa pine types, the two forest types upon which the economic life of the region largely depends. Considerable progress has been made in determining under what conditions new forests can be started after cutting and after fire. An outstanding recent development receiving wide application is a method of determining the growth rate of pine in selectively cut stands. Great progress has been made in increasing the efficiency of fire-protective organizations. Methods by which detection can be improved have been developed, a test for lookout applicants has been devised, and a rating of visibility has been established. The Lumber Codes for the important forest types in this region contain conservation practices based upon the work of this station which apply the results of much of the research to a large area of privately-owned and operated forest.

Project 11. Southern Forest Experiment Station. Work is being carried on in the southern pine types, the major timber type of the region. Included are studies of reforestation of denuded cut-over lands, of methods of cutting for timber and pulp that encourage natural reproduction of desirable species, and of naval stores practices. Under sustained yield management the South can produce about a third of the total national wood requirements, but under present conditions on many million acres of cut-over and burned lands forest regeneration will be long delayed unless planted. Results of reforestation and management studies are being put into practice currently on the increasing area of publicly-owned forests and rules of forest practice developed by the station have been incorporated in the southern pine lumber code. Conservation methods of chipping trees for naval stores developed at the Station have been incorporated in the marketing agreement of the A.A.A. with the turpentine and rosin producers. Most of the new turpentining leases in the South now contain provisions based on the results of this work. Another phase of work is that of protection against fire. The South has a greater fire problem than any other region because of the wide-spread practice of burning the woods. Information on the damage done by fire is serving to awaken the South to its serious forest fire situation.

Project 12. Southwestern Forest and Range Experiment Station. Research is designed largely to furnish information upon the growth and management of ponderosa pine, practically the only timber tree in extensive regions of the Southwest. Because of their high timber value and accessibility, these forests have been heavily exploited in the past. As practically all the forest lands are now in Government ownership the results of this work are immediately applied.

Project 13. Washington, D.C. The work in Washington represents the overhead necessary for proper correlation and supervision of forest management research at the regional forest experiment station and to making the results of this work available to the public. In addition two service

units are maintained; the Forest Service library and a Section of Forest Measurements. The library is maintained for the benefit of the entire Forest Service organization. The Measurements Section, in addition to developing research methods, is a material aid in increasing the efficiency and output of the field research units.

(f) RANGE INVESTIGATIONS

	Regular	P.W.A.	Total
Appropriation, 1932	$130,000	- -	$130,000
Appropriation, 1933	123,030	- -	123,030
Appropriation, 1934	100,000	$29,225	129,225
Appropriation, 1935	85,230(a)	18,950	104,180
Budget Estimate, 1936...	89,435	- -	89,435
Net Change, Budget 1936, compared with Appropriation, 1935.	+ 4,205(b)	-18,950	- 14,745

(a) Includes $4,205 to cover salary adjustment for 1935 (to 95%) as follows: (1) $1,829 transferred from Bureau of Animal Industry; and (2) $2,376 from fund authorized by Section 21(e) of Act of March 28, 1934.

(b) Increase of $4,205 compared with 1935 regular appropriation consists of 5 percent salary restoration, 1936 (to 100%). In 1935, however, there was available $104,180, consisting of the regular appropriation amounting to $85,230, plus $18,950, the balance of an allotment of $48,175 made during the fiscal year 1934 from a total of $15,967,745 made available by the Federal Emergency Administration of Public Works for physical improvements, control of tree-destroying insects and diseases, and forestry research (shown in Budget schedules at the end of Forest Service under the heading "National Industrial Recovery, Agriculture, Forest Service"). Hence, the 1936 Budget contemplates a decrease of $14,745 in total working funds.

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease: 5% Salary Restoration	Increase or decrease: Working Funds
Obligated:					
California Station:					
Regular Funds.....	$11,470	$12,460	$13,081	$612	- -
P.W.A. Funds.....	6,066	3,934	- -	- -	- $3,934
Intermountain:					
Regular Funds.....	19,078	21,704	22,690	986	- -
P.W.A. Funds.....	12,942	7,808	- -	- -	- 7,808
Northern Rocky Mountain:					
Regular Funds.....	5,727	6,112	6,395	283	- -
P.W.A. Funds.....	2,123	1,377	- -	- -	- 1,377
Southwestern:					
Regular Funds.....	25,454	27,782	29,199	1,417	- -
P.W.A. Funds.....	7,886	5,114	- -	- -	- 5,114
Washington Office:					
Regular Funds.....	15,647	17,163	18,070	907	- -
P.W.A. Funds.....	1,108	717	- -	- -	- 717
Total Obligations:					
Regular Funds.....	77,376	85,230	89,435	(1)4,205	- -
P.W.A. Funds.....	29,225	18,950	- -	- -	-18,950
Unobligated:					
Regular Funds:					
Salary reduction impoundments and vacancy savings.	4,287	- -	- -	- -	- -
Other amounts unobligated.....	18,337	- -	- -	- -	- -
Total, regular appropriation	100,000	85,230	89,435	+ 4,205 (1)	
Total, P.W.A.....	29,225	18,950	- -	-18,950	
Total all Funds.....	129,225	104,180	89,435	-14,745	

(1) The increase of $4,205 in regular funds for 1936 is for 5% salary restoration on existing projects (to 100%).

WORK DONE UNDER THIS APPROPRIATION

The work under this appropriation consists of investigations to develop improved methods of management of forest ranges and of other ranges adjacent to the national forests. It is furnishing the basic information necessary for the administration of the range resource in national forests and will aid in developing range management on the public domain, administration of which was recently provided by Congress. It is also

furnishing the methods necessary for range improvement, revegetation for erosion control, and other range land phases of the work of the C.C.C. and unemployment relief projects. The studies of range management to offset destructive drought losses have aided immeasurably in relief and land use adjustments. The 825 million acres of forest and untimbered range land represent nearly half the land area of the United States. Sound range management practices are necessary for the conservation of the range resource and to assure the stability and economic welfare of the livestock industry dependent upon these lands. These investigations alone can supply the required information.

The work is done under the authorization for range investigations specified under Section 7 of the Act approved May 22, 1928 (45 Stat., 699-702).

Project 1. California Forest and Range Experiment Station. Work under this project includes investigations to determine the best grazing managment for the ponderosa pine region consistent with reforestation of these important timber lands. It also is furnishing data urgently needed for restoring seriously depleted foothill cattle ranges on granitic soils of the central San Joaquin Valley adjoining the national forests, where increase in brush following depletion of other vegetation has intensified the fire hazard and impaired the stability of the extensive livestock industry. It is also developing grazing management of these lands which will reduce erosion and thus safeguard dams and reservoirs to be built under the half billion dollar California State wide water plan.

Project 2. Intermountain Forest and Range Experiment Station. Work includes investigations to determine the best methods of restoration, improvement and management of the depleted spring, fall and winter ranges, and of mountain ranges in the national forests. These investigations have aided greatly in the better coordination of these important parts of the yearlong range operation for profitable use. The work promises additional results urgently needed by the industry and by the Nation and the States in their emergency programs and in their permanent plans for land use and development.

Project 3. Northern Rocky Mountain Forest and Range Experiment Station. Work includes investigations to determine improved range management for the well preserved parts of the short grass ranges of the northern plains region. It promises results of great value to the livestock industry and rounds out animal husbandry investigations of the cooperating Bureau of Animal Industry and the Montana Agricultural College.

Project 4. Southwestern Forest and Range Experiment Station. This project includes investigations to determine the relation of available water for livestock to damage to ponderosa pine reproduction as a basis for range use which will insure reforestation and effective livestock production on the national forests, the important summer ranges of the Southwest. It also includes investigations to determine the most suitable means of restoring and maintaining the millions of acres of severely depleted semi-desert ranges, constantly menaced by drought. The results of these investigations have

been of vital importance in formulating current drought relief. There are so many variable and uncertain factors in these problems that many phases still demand solution.

Project 5. Washington Office. Activities of this project include the supervision of all field range investigations. Such supervision must be continued in order to insure the efficient conduct of the work. This project also aids the experiment stations, national forest administration, and the range livestock industry, through the collection and dissemination of data, for the entire country on growth requirements, distribution, and forage values of range plants.

(g) FOREST PRODUCTS INVESTIGATIONS

Appropriation, 1932	$641,300	
Appropriation, 1933	613,640	
Appropriation, 1934	566,791	
Appropriation, 1935	484,043	(a)
Budget Estimate, 1936	508,361	
Increase, Budget 1936, compared with Appropriation, 1935	24,318	(b)

(a) Includes $24,318 to cover salary adjustment for 1935 (to 95%) as follows: (1) $10,579 transferred from Bureau of Animal Industry; and (2) $13,739 from fund authorized by Section 21 (e) of Act of March 28, 1934.

(b) Increase of $24,318 compared with 1935 regular appropriation represents 5% salary restoration, 1936 (to 100%). There is no actual increase in working funds.

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease: 5% Salary Restoration	Increase or decrease: Working Funds
Obligated:					
California Station....	$12,862	$13,992	$14,692	$700	- - -
Northern Rocky Mountain.....	9,954	11,105	11,584	479	- - -
Pacific Northwest.....	12,233	13,735	14,316	581	- - -
Forest Products Laboratory, Madison, Wis.....	370,081	401,433	421,783	20,350	- - -
Washington Office.....	39,146	43,778	45,986	2,208	- - -
Total obligations:	444,276	484,043	508,361	24,318(1)	- - -
Unobligated:					
Salary reduction impoundments and vacancy savings.....	30,890	- - -	- - -	- - -	- - -
Other amounts unobligated.....	91,625	- - -	- - -	- - -	- - -
Total appropriation	566,791	484,043	508,361	+24,318 (1)	

(1) The increase of $24,318 for 1936 is for 5% salary restoration (to 100%).

WORK DONE UNDER THIS APPROPRIATION

Forestry is not only conerned with producing timber, but in its efficient utilization by satisfied consumers. The foundation of efficient utilization is research in forest products - an integral part of present-day forestry. While the importance of such services as stream control, recreation, and the prevention of erosion may vary with the different regions, there is involved to a certain extent in each region and predominantly in some the problem of ultimately using the mature timber. The far-reaching forestry program of the Administration is designed to increase the production of timber on both public and private lands, and to provide for the fullest and most effective utilization of the timber crop as it becomes ready to harvest.

Upon the efficient production and marketing of forest goods on a steadily increasing scale depend permanent jobs for several million wage earners; permanent tax revenues and fiscal stability for rural communities throughout 600 million acres of forest lands; and adequate returns on billions of dollars of public and private investment in forests and forest industries.

Forest products research is necessary to safeguard full returns from such activities as the silvicultural improvements on public lands under the Emergency Conservation Work; the effectuation of sustained yield management on private forest land under the conservation provisions of the forest industry codes; the ruralization of forest industry in the Tennessee Valley; and many subsistence homestead projects. It is especially necessary to the Administration's housing and home renovation program which will require wood as a major construction material.

The bulk of the work in forest products research is centered at the Forest Products Laboratory at Madison, Wis., with some associated work at Forest Experiment Stations and at Washington, D. C. Since its establishment in 1910 the Laboratory has become the outstanding institution of its kind in the world. Conservative estimates place the annual savings to users and producers alone through application of Laboratory findings at a figure at least 20 times the cost of operation. Only a small part of the work in forest products has been done. There can be no question of the vital part of forest products investigations in the whole forest program.

The work is done under the authorizations for forest products investigations of domestic woods and for tropical woods specified under Section 8 of the Act approved May 22, 1928 (45 Stat., 699-702).

Project 1. California Forest Experiment Station. Investigations to aid in determining the profitable application of selective logging to stands of different species, conditions, etc., by close analysis of logging and manufacturing costs and revenues from trees of different species, sizes, and quality; and of the durability in use of forest products with different forms of preservative treatment. The latter is a recurring activity, and all are supplying information which, in coordination with other forest research, is of special value at this time in industrial rehabilitation and the development for forestry.

Project 2. Northern Rocky Mountain Forest Experiment Station. Work is in part similar to that at the California Forest Experiment Station but directed and adapted to meet the different regional problems and conditions. A large number of service test installations to appraise the efficiency of various preservatives and processes must be reported upon and analyzed in cooperation with the Forest Products Laboratory annually. The privately-owned and important forest resources of this region, particularly in Idaho, having long been subject to destructive management. The rehabilitation of these resources and the industries based upon them require the continuation of this project.

Project 3. Pacific Northwest Forest Experiment Station. Waste in logging and lumber manufacture in the Pacific Northwest is the largest in the entire United States, and the current activities under this project are partly directed to evaluating and developing methods of reducing or eliminating this waste. This work in correlation with other investigations, is aimed fundamentally at improved operating practices which will aid industrial rehabilitation, sustained production, and the practice of forestry. Present and potential regional consumption of forest products is also being studied. This entire project is intimately related to fundamental long-time needs for information, as well as with the emergency recovery measures now under way of in prospect.

Project 4. Forest Products Laboratory. The purpose of the work at the Forest Products Laboratory is to increase the usefulness and value of forest products and to improve and broaden the markets for them.

The program under way, designed to meet present problems includes investigations to bring about radical improvements in the engineering of wood construction so that simple and inexpensive but thoroughly satisfactory wooden houses can be built. Such improvements would mean more desirable homes to the consumer and new life to the building market. The program also includes investigations to find a cheap treatment that will make wood fire resistent and so open up a potential market for billions of feet that have been lost on account of the hazard of untreated lumber. Anti-shrinkage and preservative treatments are a part of the program. Here again treatment that would successfully reduce shrinkage and swelling would give a tremendous impetus to wood utilization as would also the development of a colorless, odorless chemical capable of making wood resistant to decay and insect attack. The strength of wood fastenings - nails and bolts - has been worked out as one important key to the mass production of fabricated building parts such as floor, wall, and roof panels that can be erected in units. Study is under way to develop better methods of painting so that less frequent repainting will be necessary. The suitability of American woods for pulp and paper by present, improved, or new methods and the elimination of waste and of stream pollution are being studied. Imports of pulpwood, pulp, and paper which now total nearly three-fifths of our paper requirements and aggregate some $250,000,000 in value can and should be largely eliminated. Selective logging studies are determining costs and returns from trees of different sizes, species, and regions not only for lumber but for other products such as dimension stock, veneer, piles, pulpwood, staves, etc. Studies are also improving the low efficiency of the small sawmill which cuts over one-third of the

lumber produced. These studies have a direct application in carrying out the conservation provisions of the Lumber Code. The various projects at the Laboratory have as their foundation the results of years of study on the physical and chemical properties of over 100 of our native woods and their suitability to several thousand different uses.

Project 5. Washington, D.C. Work under this project consists of the supervision of all forest products investigations, a continuing activity that cannot be eliminated if the work is to be effective; of assistance to other Federal Departments in the selection and purchase of forest products; of advice to the general public on improved processes, specifications, etc.; and of limited amount of investigative work such as cooperation with the Bureau of the Census in the collection and compilation of statistics of production, consumption, and distribution of lumber and other forest products and of stumpage values.

(h) FOREST SURVEY	Regular	P.W.A. Research	P.W.A. Lieu Funds	Total
Appropriation, 1932	$200,000	--	--	200,000
Appropriation, 1933	170,280	--	--	170,280
Appropriation, 1934	160,067	$250,081	--	410,148
Appropriation, 1935	--	74,919	$124,123	199,042(a)
Budget Estimate, 1936	129,703	--	--	129,703
Net change, Budget 1936, compared with Appropriation, 1935	+129,703(b)	-74,919	-124,123	-69,339

(a) Includes $118,543 in funds transferred from P.W.A. in lieu of regular appropriation; $5,580 for 5% salary restoration, 1935 (to 95%), from fund authorized by Section 21(e) of Act of March 28, 1934 (total, $124,123); and $74,919, the balance of an allotment of $325,000 made during the fiscal year 1934 from a total of $15,967,745 made available by Federal Emergency Administration of Public Works for physical improvements, control of tree-destroying insects and diseases, and forestry research (shown in Budget schedules at the end of Forest Service under the heading "National Industrial Recovery, Agriculture, Forest Service").

(b) Increase of $129,703 in regular funds is to restore $118,543 allotted in 1934 from P.W.A. funds, plus $5,580 for 5% salary restoration, 1935 (to 95%), from fund authorized by Section 21 (e) of Act of March 28, 1934 (total, $124,123); and an increase of $5,580 for 5% salary restoration, 1936 (to 100%). In 1935, however, there was available $199,042, consisting of funds enumerated in footnote (a). Hence, the 1936 Budget contemplates a decrease of $69,339 in total working funds.

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease 5% Salary Restoration	Increase or decrease Working Funds
Obligated:					
California -					
Regular Funds.....	$ 5,360	- -	$6,068	$ 302	+$5,766
P.W.A. " (Research).	35,762	$10,713	- -	- -	-10,713
" " (Lieu Funds)	- -	5,766	- -	- -	- 5,766
Lake States -					
Regular Funds.....	6,466	- -	7,221	337	+ 6,884
P.W.A. " (Research)..	35,261	10,564	- -	- -	-10,564
P.W.A. " (Lieu Funds)	- -	6,884	- -	- -	- 6,884
Northern Rocky Mountain -					
Regular Funds.....	12,672	- -	11,955	534	+11,421
P.W.A. " (Research).	23,758	7,117	- -	- -	- 7,117
" " (Lieu Funds)	- -	11,421	- -	- -	-11,421
Pacific Northwest -					
Regular Funds.....	47,015	- -	43,898	1,608	+42,290
P.W.A. " (Research).	27,259	8,166	---	- -	- 8,166
" " (Lieu Funds)	- -	42,290	- -	- -	-42,290
Southern -					
Regular Funds.....	35,178	- -	39,250	1,629	+37,621
P.W.A. " (Research)..	128,041	38,359	- -	- -	-38,359
" " (Lieu Funds)	- -	37,621	- -	- -	-37,621
Washington Office -					
Regular Funds.....	18,514	- -	21,311	1,170	+20,141
P.W.A. " (Lieu Funds)	- -	20,141	- -	- -	-20,141
Total Obligations:					
Regular Funds.....	125,205	- -	129,703	5,580 (2)	+124,123(3)
P.W.A. " (Research)..	250,081	74,919	- -	- -	-74,919
" " (Lieu Funds)	- -	124,123(*)	- -	- -	-124,123
Unobligated:					
Regular Funds:					
Salary reduction impoundments and vacancy savings.....	13,482	- -	- -	- -	- -
Other amounts unobligated.....	21,380	- -	- -	- -	- -
Total Regular Appropriation	160,067	- -	129,703	+ 129,703 (1)	
Total P.W.A. Research.	250,081	74,919	- -	- 74,919	
Total P.W.A. Lieu Funds	- -	124,123	- -	- 124,123	
Total, All Funds.....	410,148	199,042	129,703	- 69,339	

(*) Includes $5,580 for 5% salary restoration, 1935, from fund authorized by Section 21 (c) of Act of March 28, 1934.

(1) The increase of $129,703 in regular funds for 1936 includes:

(2) $5,580 for 5% salary restoration, 1936 (to 100%).

(3) $124,123 to restore the regular appropriation for the Forest Survey for which $118,543 of Public Works funds were utilized in lieu of regular funds for the fiscal year 1935 for the existing projects listed below under heading, "Work under this appropriation," plus $5,580 for salary restoration, 1935 (to (95%), from funds provided by Sec. 21 (e) Act of March 28, 1934.

WORK DONE UNDER THIS APPROPRIATION

The Forest Survey includes an authoritative nation-wide inventory of the extent, location, and condition of forest lands; the quantity, kinds, quality, and availability of timber now standing on these lands; the rate of depletion through cutting, fire, insects, disease, and other causes; the current and probable future rate of timber growth and the productive capacity of our forest area; and the present and probable future requirements for forest products in the different parts of the country by all classes of consumers, including many major industries. It also includes analysis of the relation of these findings to one another and to other economic factors as a basis in formulating policies, principles, and plans for forest land utilization. It involves both field service and compilation of existing data from a great variety of sources.

The Survey is obtaining fundamental information long needed and now vitally essential to the most efficient prosecution of important measures of the Administration dealing with conservation and land use, such as:- the effectuation of forest conservation and sustained production under the National Recovery Act codes for forest industries, the retirement of submarginal land from agricultural use, expanded public acquisition of land for forest purposes, a permanent Civilian Conservation Corps program, the Tennessee Valley development, and the establishment of permanent forest communities. At the present rate of progress the accumulation of data is lagging far behind the demand.

The project is conducted under the annual authorization contained in Section 9 of the Act approved May 22, 1928.

Project 1. California Forest and Range Experiment Station. Limited Federal funds have restricted this project to the preparation of a forest cover type map. The other phases of the Survey will follow as rapidly as funds become available.

Project 2. Lake States Forest Experiment Station. The project in the region involves the coverage of nearly 60 million acres of forest land in cooperation with each of the three states, which have already contributed a great deal of their own effort to the project.

Project 3. Northern Rocky Mountain Forest and Range Experiment Station. This region includes the only remaining supply of white pine in the United States and because of the particular national and regional importance of the forests in this territory the Federal Government is spending large sums in their protection against fire and forest diseases.

Project 4. Pacific Northwest Forest Experiment Station. The field work of the Survey has been under way since 1930, and is nearing completion in the Douglas Fir belt, which has the greatest remaining supply of virgin timber, and where exists the most important and unsatisfactory economic situation as to forest industries in the United States. The Survey will supply basic information urgently needed; in effectuating the lumber code commitments on sustained production in that highly important and critical situation, to national forest administration; and to the formulation of land use plans by many public, commercial, and other local agencies. The work ahead in the Douglas fir belt is the analysis, interpretation, and formulation of principles for economic units, and for the region as a whole. The field inventory work in the pine types in eastern Washington and Oregon recently commenced should be prosecuted as rapidly as possible.

Project 5. Southern Forest Experiment Station . This project includes the entire southern pine naval stores region, the bulk of the southern pine lumber-producing stands, the chief hard-wood-producing area of the Nation, and the Tennessee Valley Authority development project, all of which would be covered by the Survey.

Project 6. Washington, D. C. This project includes the supervision organization, and coordination of the Survey project in the several regions, and is indispensable to the efficient prosecution of the work on a nation-wide basis. It includes also a comprehensive study of present and probable future wood needs by various classes of consumers and kinds of product. This is an essential and major part of the main project, and it should be carried on concurrently with the resource survey so as to facilitate the interpretation of results and formulation of conclusions.

(i) FOREST ECONOMICS

	Regular	P.W.A.	Total
Appropriation, 1932	$75,000	- - -.	$75,000
Appropriation, 1933	70,240	- - -	70,240
Appropriation, 1934	60,000	$9,854	69,854
Appropriation, 1935	50,894(a)	2,056	52,950
Budget Estimate, 1936	53,295	- - -	53,295
Net Change, Budget 1936, compared with Appropriation, 1935	+ 2,401(b)	-2,056	+ 345

(a) Includes $2,401 to cover salary adjustment for 1935 (to 95%) as follows: (1) $1,044 transferred from Bureau of Animal Industry; and (2) $1,357 from fund authorized by Section 21 (e) of Act of March 28, 1934.

(b) Increase of $2,401 compared with 1935 regular appropriation represents 5% salary restoration, 1936 (to 100%). In 1935, however there was available $52,950, consisting of the regular appropriation amounting to $50,894 plus $2,056, the balance of an allotment of $11,910, made during the fiscal year 1934 from a total of $15,967,745 made available by the Federal Emergency Administration of Public Works for physical improvements, control of tree-destroying insects and diseases, and forestry research (shown in Budget schedules at the end of Forest

Service under the heading "National Industrial Recovery, Agriculture, Forest Service"). Hence, the 1936 Budget contemplates an increase of $345 in total working funds.

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease 5% Salary Restoration	Working Funds
Obligated:					
Lake States:					
Regular Funds.....	$5,087	$5,525	$5,775	$250	- -
P.W.A. Funds.....	- -	- -	- -	- -	- -
Pacific Northwest:					
Regular Funds.....	11,637	12,455	12,981	526	- -
P.W.A. Funds.....	6,288	1,312	- -	- -	$-1,312
Southern Station:					
Regular Funds.....	18,208	19,696	20,633	937	- -
P.W.A. Funds.....	3,566	744	- -	- -	- 744
Washington, D.C.:					
Regular Funds.....	12,113	12,218	13,906	688	- -
P.W.A. Funds.....					
Total Obligations:					
Regular Funds.....	47,045	50,894	53,295	2,401(1)	- -
P.W.A. Funds.....	9,854	2,056	- -	- -	-2,056
Unobligated:					
Regular Funds:					
Salary reduction impoundments and vacancy savings....	3,340	- -	- -	- -	- -
Other amounts unobligated.....	9,615	- -	- -	- -	- -
P.W.A. Funds.....	- -	- -	- -	- -	- -
Total, Regular Appropriation.....	60,000	50,894	53,295	+ 2,401 (1)	
Total P.W.A.....	9,854	2,056	- -	- 2,056	
Total, All Funds.....	69,854	52,950	53,295	+ 345	

(1) The increase of $2,401 is for 5% salary adjustments, 1936 (to 100%).

WORK DONE UNDER THIS APPROPRIATION

Current work includes (a) investigations of ways and means of replacing the customary destructive methods of exploitation with the practice of forestr including sustained yield management on privately-owned lands. This requires appraisal of the economic factors in various forest regions that are obstructing forestry practice, and the formulation of new operating methods, and of other means, including needed public assistance, that will aid in overcoming these obstacles; (b) a study of the financial aspects of forestry, especially of the costs and returns from timber growing, to determine for various forest regions where and under what economic conditions forestry may be successfully practiced; and of the potential contributions of forestry to community

stability and prosperity; and (c) a study of the "new public domain" which is being created by the abandonment and reversion to public ownership through tax delinquency of cut-over land. This deals with the extent and trends of revision in different regions, the feasibility of using the land for forest purposes, the desirable balance of ownership between Federal, State, and other public agencies, and the methods and aims of public administration and use.

This is a series of studies which in correlation with other forest research strike directly at the most efficient and economical ways of effectuating the commitments of the forest industry codes; and at attaining the important forest land use objectives included in the Administration's comprehensive recovery program.

The work is done under the authorization for investigation in forest economics, specified under Section 10 of the Act approved May 22, 1928 (45 Stat., 699-702).

Project 1. Lake States Forest Experiment Station. Work is concentrated on the "new public domain" phase, which has reached a more acute stage than in any other region. This study, prosecuted in cooperation with other Federal, State, and local agencies, is supplying information and advice of vital importance to the formulation and application of constructive land utilization plans, including the correlation of agricultural and forest use, the greatly expanded program of Federal acquisition, and the development of State and county forest systems, in the Lake States. The study should by all means be continued.

Project 2. Pacific Northwest Forest Experiment Station. The work includes both the "new public domain" and the investigation of ways and means of stimulating private forestry, It is confined mainly to the Douglas fir belt of the Pacific Northwest.

This Douglas fir belt includes one-third of our remaining saw timber. Three-fifths is in private ownership and characterized by destructive utilization practices; cut-over land is often rendered completely unproductive by successive burning, and abandoned through the processes of tax delinquency; sawmill capacity is far in excess of sustained yield capacity or market requirements; altogether it represents the most serious and baffling "sore spot" in the nation's forest economic situation. These studies are furnishing vital information as to practical and profitable means, including revolutionary changes in the mechanics of logging and in methods of cutting, of converting the industry to sustained yield management as required by the National Recovery Act lumber code, and they are also aiding more correct local taxation practices, and cooperation between the correlation of public and private forest land ownership. Forest industries and local public and commercial agencies are insistent that these incomplete investigations be continued.

Project 3. Southern Forest Experiment Station. The work here includes studies of the financial aspects of private forestry in the southern pine region, and of the reversion of cut-over land to the "new public domain" through tax delinquency and abandonment. Most of the 200 million acres of forest land in the South is privately owned (some in process of reversion). But an immensely expanded program of forest

acquisition, a part of the Administration's emergency and conservation measures, in now under way. The region still has a large number of forest industries whose perpetuation is essential to regional welfare. Because of its enormous potential productive capacity and favorable location, the region is the logical source of timber for much of the eastern United States, and for export trade. The forest resource is the basis of the world's largest naval stores industry. But forest productivity has seriously deteriorated, and industry has correspondingly suffered, as the result of destructive practices. It is the purpose of the National Recovery Act lumber code and of other recovery measures to install the practice of forestory on private land, to restore forest productivity by public acquisition where necessary, and to rehabilitate the forest products industries. These studies, though inadequate in scope and resources, are obtaining information vital to these purposes.

Project 4. Washington, D.C. This includes planning, organization, and coordinating, and is essential to the effective conduct of the work above described. It includes original investigations of ways and means of promoting private forestry throughout the United States. It also includes service in connection with the conduct of the conservation provisions of the National Recovery Act lumber code; and with other features of the Administration's recovery program.

(j) CODE COMPLIANCE INSPECTION

Appropriation, 1935	- -
Budget Estimate, 1936	$200,000
Increase, Budget 1936, compared with Appropriation, 1935	200,000

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increased or decrease 5% Salary Restoration	Working Funds
Obligated:					
Lumber Code Compliance Inspection.....	- -	- -	200,000	- -	+ 200,000(1)

(1) This represents a new item in the amount of $200,000.

The economic and social contributions our forests may make to the sustaining of community life are commanding more attention than ever before. The manner in which the forests are handled determines the contributions they will make. It has long been recognized that public assistance toward management costs of private forest lands is justified where the public welfare can be thereby promoted but private ownership carries a very definite responsibility to conserve the public values inherent in the

forests. Management practices should be followed which will not dissipate these values even though the owner's immediate self-interest might lead to a continuance of the old "cut out and get out" practice, with abandonment of the land and the communities dependent on its products.

The Conservation requirement which has been placed in the Code for the Lumber and Timber Products Industries which became effective June 1, is the latest step taken by the public and timber operators to insure perpetuation of the forest resources. Expert and zealous administration can make it the most effective forest conservation measure of widespread application that was ever adopted in this country. It commits the industry to measures that will keep the greater part of our 400 million acres of privately-owned timber land in a continuously productive condition.

On the basis of inherent public responsibility as forest land owners and as a return for the public assistance given through the Code and through the various cooperative projects, the industry is expected to comply with certain specified general rules of forest practice. These rules represent merely the minimum measures necessary to keep the land in a productive condition and are not up to the standard of those used on the National Forests.

The Lumber Code was established on the basis that it is to be an undertaking in self-government by the lumber industry. The directing head is the Lumber Code Authority. The Forest Service with almost thirty years of experience in forest research studies and in the management of the timber resources of the extensive National Forests is qualified and willing to assist as an adviser and collaborator in the consideration of the many problems that will arise but the success of this great venture in conservation rests primarily with the Code organization. The general public and the Federal and State forestry agencies expect this organization to exercise aggressive leadership in the industry both to prevent perfunctory compliance by operators with the established rules and to initiate more intensive forestry measures as conditions demand or permit such action. Only in this way can the present and prospective public assistance to the industry be justified and the desire of the Administration for better nation-wide forest management be met.

WORK DONE UNDER THIS APPROPRIATION

The Forest Service participation in Code work will consist of giving technical advice and assistance to Code agencies on the formulation, modification, and administration of forest practice rules; "sampling" inspections to determine the general extent of compliance with the rules by operators and the quality of the inspection work being done by the Code men; investigation of specific instances of flagrant violations of the rules; educational work among members of forest practice committees and operators on Code requirements and new forest practice methods; investigation of forest conditions, logging methods, etc., with a view to improving forest practice rules; investigation on our own initiative or at the request and with the cooperation of public and Code agencies of opportunities to reduce excessive manufacturing capacity in a given locality; to make working plans

that will stabilize industry and to establish sustained yield production units involving multiple ownership of land. The study of the major management problems is perhaps the most important contribution the Forest Service can make to forest conservation on private lands and the planned organization provides several men in each of the more important forest regions to be used primarily for such work.

It is estimated that the cost of seeing that the provisions of the Rules of Forest Practice are carried out and to provide for the direction, preparation, and correlation of plans for the establishment of permanent units for sustained yield operations will require an allotment of $200,000 for the fiscal year 1936.

(k) FOREST FIRE COOPERATION

Appropriation, 1932	$1,775,000
Appropriation, 1933	1,611,580
Appropriation, 1934	1,587,513
Appropriation, 1935	1,573,619 (a)
Budget Estimate, 1936	1,578,632
Increase, Budget 1936, compared with Appropriation, 1935	5,013

(a) Includes $225,000 provided by Deficiency Appropriation Act, fiscal year 1934.

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease: 5% Salary Restoration	Increase or decrease: Working Funds
Obligated:					
Taxation Inquiry and Insurance.....	$35,759	$45,000	$45,000	---	---
Cooperation with States in forest-fire prevention and suppression...	1,529,890	1,528,619	1,533,632	$5,013	---
Total obligations.	1,565,649	1,573,619	1,578,632	(1)5,013	---
Unobligated:					
Salary reduction impoundments.....	4,998	---	---	---	---
Other legislative impoundments.....	2,337	---	---	---	---
Other amounts unobligated.....	14,529	---	---	---	----
Total appropriation.	1,587,513	1,573,619	1,578,632	+ 5,013	

(1) The increase of $5,013 for 1936 is to provide for 5% salary restoration, 1936 (to 100%).

WORK DONE UNDER THIS APPROPRIATION

Project 1. Forest Taxation and Insurance. Work involves local application studies, in cooperation with State and other agencies, necessary to supplement, adapt, and effect the general conclusions and principles already determined to the widely varying conditions of individual States. This phase of the project is just commencing. Taxation under present methods is generally recognized as one of the greatest obstacles to private forestry practice and a major cause of forest destruction. Interest in forest taxation is wide-spread on the part of forest owners, State and local authorities, and the agencies concerned with the conservation and development of forest resources. Urgent demand is being made, and the necessity exists, for aggressive Federal assistance in obtaining forest tax reform to accomplish the stated objectives of forest conservation and the rehabilitation of the forest products industries under the National Recovery Act.

This project also includes the investigation of principles of, and the feasibility of developing, a system of forest fire insurance. Special emphasis is being given to the prosecution of this study because the information being obtained as to damage and risk elements is essential in the development of a sound system of forest credits, itself an important aid to the conversion of private forest enterprises from a destructive liquidation to a sustained production basis.

Project 2. Cooperation with States in Forest Fire Prevention and Suppression. The job here presented is to protect from fire 414,000,000 acres of State and privately-owned forest lands in the United States and Hawaii which are classed as in need of organized protection. Federal cooperation is carried on by the Forest Service under agreements with the several States which provide for plans of work; for budgets; for Federal reimbursement to the States after the work is done and paid for, to the extent of the allotted Federal share; and for Forest Service inspection.

This cooperation has materially increased the scope and effectiveness of fire control on State and private-owned Forest lands. Since a large part of the benefit of protection comes to the public, since a large part of the fire which must be fought is caused by the public, and since the public alone is able to cope with the situation, the work is peculiarly suited to Federal and State participation and leadership. Federal participation is of particular importance because the maintenance and restoration of region-wide watersheds are involved. Furthermore Forest fire is no respector of State boundaries and the correlation of the various State agencies is highly important, and is greatly facilitated by Federal cooperation. By the wise exercise of leadership the Federal government contributes largely toward improved standards and substantial State and private participation. The Clarke-McNary Law has clearly recognized this national interest and responsibility.

Allotments of Federal funds are made to the States with three definite objects in view.

(a) To stimulate State, county, town and private effort; (b) to effect unified organizations to which all interested agencies can make the fullest contribution toward the protection of the forest from fire; and (c) to assist in the actual organization and development of protection work in the cooperating State. It is highly important that allotments to the States be increased at this time when plans for increased activity in forest development and protection are being made in almost every State of the Union. Very substantial Federal appropriations are of the greatest significance as a means for building up the forests of the United States. They are necessary if the public is going to fulfill its obligations under the lumber code which presents opportunities which have never been offered before for a sharp advance in forest protection. For each Federal dollar that is spent approximately $3 of State and private money will also be spent.

Results accomplished in the cooperative protection work fully justify increased participation by the Federal Government. Based on statistics for the calendar year 1933, over 211,000,000 acres of State and private forest land are now being protected from fire. The total area estimated as in need of such protection is 414,000,000 acres. The effect of this protection is striking. Only 1.22% of the productive forest area protected was burned in 1933 as compared with 21% of forest area unprotected. The number of fires reported on the protected area was 48,770, while for the unprotected area the number was 87,435. The total damage from fire on the protected area was estimated as approximately $16,900,000 as against a total of approximately $43,000,000 on the unprotected area.

The success indicated above in protecting over half the State and private forest land through these cooperative projects and the great need of increasing this protection to include the no-man's land which is now unprotected and which constitutes 193,000,000 acres or a little less than half of the total 414,000,000 of State and private land needing protection, is believed to be ample justification for the appropriation under consideration.

STATE SUMMARY OF ALLOTMENTS

FOREST FIRE COOPERATION UNDER SECTION 2 OF THE CLARKE-McNARY LAW

State	Estimated Cost of adequately protecting State and private forest land	Federal Objective (assumed as 25% of total)	State and Private expenditures, calendar year 1933	FEDERAL ALLOTMENT		
				Fiscal year 1934	F.Y. 1935 (this gives general indications for 1936	Increase or decrease
Ala.	$573,000	$143,250	$36,977	$33,000	$35,000	+ $2,000
Ark.	484,000	121,000	7,489	18,000	38,720	+ 20,720
Calif.	969,000	242,250	435,034	171,711	155,500	- 16,211
Conn.	76,000	19,000	48,757	15,193	13,300	- 1,893
Del.	12,000	3,000	3,658	1,871	1,400	- 471
Fla.	847,000	211,750	74,174	67,760	69,000	+ 1,240
Ga.	775,000	193,750	33,000	41,700	62,000	+ 20,300
Hawaii	5,173	1,293	1,473	816	640	- 176
Idaho (N)	420,000	105,000	176,100	53,108	59,000	- 5,892
Idaho (S)	27,000	6,750	15,592	4,110	5,200	+ 1,090
Ill.	77,000	19,250	- -	- -	- -	- -
Ind.	84,000	21,000	6,025	7,127	6,720	- 407
Ky.	212,000	53,000	5,853	5,300	15,000	+ 9,700
La.	434,000	108,500	63,473	47,577	41,300	- 6,277
Me.	342,000	85,500	125,172	49,926	47,700	- 2,226
Md.	73,000	18,250	31,133	13,737	11,000	- 2,737
Mass.	169,000	42,250	70,398	27,925	26,700	- 1,225
Mich.	662,000	165,500	509,756	107,440	102,700	- 4,740
Minn.	697,000	174,250	363,655	94,896	89,900	- 4,996
Miss.	563,000	140,750	19,548	20,716	21,345	+ 629
Mo.	347,000	86,750	- -	- -	- -	- -
Mont.	190,000	47,500	86,033	24,601	29,200	+ 4,599
Nev.	13,557	3,389	3,130	1,904	1,490	- 414
N. H.	131,000	32,750	40,522	15,596	15,100	- 496
N. J.	128,000	32,000	101,000	32,000	28,300	- 3,700
New Mex.	26,000	6,500	3,029	2,080	2,200	+ 120
N. Y.	378,000	94,500	243,502	82,707	69,500	- 13,207
N. C.	632,000	158,000	34,158	38,000	50,560	+ 12,560
Ohio	60,000	15,000	8,131	5,643	5,200	- 443
Okla.	165,000	41,250	12,287	10,900	12,000	+ 1,100
Ore.	584,000	146,000	297,537	82,655	91,500	+ 8,845
Penn.	364,000	91,000	234,654	76,671	21,362(2)	- 55,309
R. I.	17,000	4,250	10,466	1,912	2,000	+ 88
S. C.	378,000	94,500	21,053	21,605	30,240	+ 8,635
S. D.	4,500	1,125	2,106	791	750	- 41
Tenn.	245,000	61,250	19,970	18,300	19,600	+ 1,300
Texas	434,000	108,500	41,482	40,530	36,200	- 4,330
Vt.	57,000	14,250	8,879	6,762	5,500	- 1,262
Va.	397,000	99,250	37,665	31,760	31,760	- -
Wash.	632,000	158,000	230,602	79,179	90,700	+ 11,521
West. Va.	312,000	78,000	67,779	26,643	30,200	+ 3,557
Wisc.	390,000	97,500	523,492	86,781	69,000	- 17,781
Total	13,386,230	3,346,557	4,054,744	1,468,933	1,444,487	- 42,446
Administration and inspection.				66,221	75,289	
Forest taxation and Insurance study				32,621	46,500	
Contingent				19,738	7,342	
				1,587,513	1,573,619	

(1) Project started fiscal year, 1934.
(2) Reduced by $27,500 to offset additional allotment in same amount made in 1934.

(1) COOPERATIVE DISTRIBUTION OF FOREST PLANTING STOCK

Appropriation, 1932	$ 95,000
Appropriation, 1933	79,960
Appropriation, 1934	74,730
Appropriation, 1935	56,296
Budget Estimate, 1936	56,379
Increase, Budget 1936, compared with Appropriation, 1935	83

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease: 5% Salary Restoration	Increase or decrease: Working Funds
Obligated:					
Cooperation with States in the procurement, production, and distribution of forest trees, seeds, and plants, in establishing wind breaks, shelter-belts, and farm wood-lots upon denuded or non-forested lands.....	52,933	$ 56,296	$ 56,379	(1) $ 83	- --
Unobligated:					
Salary reduction impoundments.....	199	- -	- -	- -	- -
Other amounts unobligated	21,598	- -	- -	- -	- -
Total appropriation..	74,730	56,296	56,379	+ 83 (1)	

(1) The increase of $83 for 1936 is to provide for 5% salary restoration, 1936 to (100%).

WORK DONE UNDER THIS APPROPRIATION

The work under this appropriation consists of cooperation with States in the procurement, production, and distribution of forest tree seeds and plants for establishing windbreaks, shelterbelts, and farm woodlots upon denuded or nonforested lands, as authorized by Section 4, Clark-McNary Act of June 7, 1934.

This work is administered directly by the State agencies; the Forest Service inspects, advises, and correlates. It has contributed substantially to the C.C.C. program through the facilities which have been available for the use of the C.C.C. camps in producing trees for erosion and other C.C.C. planting. The output of these projects in trees is between 20 and 25 million per year, the number of cooperating States being 38, in addition to Puerto Rico and Hawaii. It is very desirable that these projects be built up at this time when opportunities are presented at every hand for the profitable utilization of otherwise

waste farm lands for the production of trees both from the point of view of the individual farmer and the general public, and when the desirability is so keenly felt of planting for the control of erosion by wind and water, and for the amelioration of droughts.

(m) ACQUISITION OF LANDS FOR PROTECTION OF WATERSHEDS OF NAVIGABLE STREAMS

Appropriation, 1932	$ 2,000,000	
Appropriation, 1933	200,000	
Appropriation, 1934	85,854	(a)
Appropriation, 1935	- - - -	(b)
Budget Estimate, 1936	- - - -	(b)

(a) Although the Act making appropriations for the Department of Agriculture for the fiscal year 1934 provided $85,854 for the acquisition of forest lands, there were no expenditures from this appropriation because of the availability of funds authorized by the Act of June 16, 1933 (see footnote (b).

(b) By executive order of July 21, 1933, the President allotted for the acquisition of forest lands $20,000,000 of the funds made available by the Act approved June 16, 1933 (Public 67, 73d Congress), and by executive order of December 1, 1934 the President allotted an additional $10,000,000of funds from the same source (E.C.W. Funds). In view of the availability of these funds, no estimate for the acquisition of lands is included in the appropriations for the Department of Agriculture for the fiscal years 1935 and 1936.

EMERGENCY FUNDS

National Industrial Recovery (Transfer from War to Agriculture) Forest Service, 1933- 1935

As stated in note (b) preceding, the President by Executive Orders of July 21, 1933, and December 1, 1934, allotted for acquisition of forest lands $30,000,000 of the funds made available under the Emergency Conservation and Industrial Recovery Acts.

The work to be done includes: General field examinations to determine areas within which forest land purchases should be made; compilation of basic title data such as original colonial grants and ensuing transfers; compilation of lists of land owners; solicitation of offers of lands; examinations; cruises, mapping and appraisal of offered lands and preparation of reports thereon; initiation of plans and programs of protection, development, management and administration. (2) Compilation of reports for consideration and action by National Forest Reservation Commission; verification of titles to lands approved for purchase and transmittal to Attorney General for approval; assumption of full control over acquired lands and actual application thereto of all principles of National Forest management, including timber sales, other uses of natural resources, protection against fire, insects and diseases, silvicultural operations, etc.

(n) NATIONAL FOREST RESERVATION COMMISSION

Appropriation, 1932	$ 500
Appropriation, 1933	576
Appropriation, 1934	3,600
Appropriation, 1935	6,400
Budget Estimate, 1936	7,500
Increase, Budget, 1936, compared with Appropriation, 1935	+ 1,100

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease: 5% Salary Restoration	Increase or decrease: Working Funds
Obligated: Expenses of National Forest Reservation Commission.....	$1,938	$ 6,400	$ 7,500	(1) $200	+ $900(2)
Unobligated:	1,662	- -	- -	- -	- -
Total appropriation.	3,600	6,400	7,500	+ 1,100	

The increase of $1,100 for 1936 includes:

(1) An increase of $200 to cover 5% salary restoration, 1936 (to 100%)

(2) An increase of $900 for traveling and other expenses of the commission due to increased demands on its members because of the land acquisition program now being carried on.

Note: - This appropriation has been a specific permanent appropriation to meet the necessary expenses of the Commission and its members. Effective July 1, 1935, the Act of June 26, 1934 abolished it as a permanent appropriation and authorized an annual appropriation from the general fund of the Treasury in identical terms and in such amounts as now provided by the laws providing such permanent appropriations.

WORK DONE UNDER THIS APPROPRIATION

This appropriation covers the necessary expenses of the Commission and its members and employees, who, under the Week's Law as amended by the Clark-McNary Law, are authorized to approve the purchase of lands for forestry purposes.

(o) REFUNDS TO DEPOSITORS, EXCESS OF DEPOSITS, NATIONAL FOREST FUND

Appropriation, 1932	$ 75,000
Appropriation, 1933	75,000
Appropriation, 1934	75,000
Appropriation, 1935	60,000
Budget Estimate, 1936	- - -
Decrease, Budget 1936, compared with Appropriation, 1935	60,000 (1)

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease 5% Salary Restoration	Increase or decrease Working Funds
Obligated: Refunds to depositors, excess of deposits, National Forest Fund	$33,511	$60,000	- - -	- - -	-$60,000(1)
Unobligated:	41,489	- - -	- - -	- - -	- - -
Total appropriation...	75,000	60,000	- - -	-60,000	

(1) Under Sec. 18 of the "Permanent Appropriation Repeal Act, 1934," approved June 26, 1934, this appropriation was abolished as a "permanent appropriation item". Requirements for 1936, therefore, are included in estimates of appropriations for "Refund of Moneys Erroneously Received and Covered," Treasury Department.

(p) PAYMENTS TO STATES AND TERRITORIES, NATIONAL FOREST FUND

Appropriation, 1932	$ 1,600,000
Appropriation, 1933	1,240,000
Appropriation, 1934	940,000
Appropriation, 1935	660,000
Budget Estimate, 1936	660,000

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease 5% Salary Restoration	Increase or decrease Working Funds
Obligated:					
Payment of 25% of National-forest receipts to States in which national forests are situated	$650,861	$822,862	$660,000	- - -	- - -
Difference between estimates and actual obligations.....	+289,139	-162,862	- - -	- - -	- - -
Total appropriation.....	940,000	660,000	660,000	- - -	

WORK DONE UNDER THIS APPROPRIATION

Money deposited by depositors to miscellaneous receipts in excess of amounts actually due the Government are returned to depositors and the amounts so paid are charged to this appropriation.

The law requires that 25 percent of all money received from National Forests during any fiscal year be paid to the States and Territories in which the National Forests are located. The amount due States for the fiscal year 1934, which must be paid during the fiscal year 1935, is $822,862.19.

It is estimated that the payment which will become due the States at the close of the fiscal year 1935 and which must be made from the 1936 appropriation will be substantially the same as the 1935 payment since the estimated increase in revenue from sale of timber during the fiscal year 1935, will be offset by a decrease in receipts from grazing activities brought about by reductions of basic fees charged for livestock grazed on the National Forests.

The amount of this appropriation varies each year in direct proportion to national-forest receipts during the previous fiscal year. Increases in this appropriation are offset by additional revenue to the Federal Treasury in the ratio of 4 to 1. That is, for each one dollar increase in the payment to States, the gross revenue to the Federal Treasury has been increased four dollars.

(q) PAYMENTS TO SCHOOL FUNDS, ARIZONA AND NEW MEXICO, NATIONAL FOREST FUND

Appropriation, 1932	$ 40,000
Appropriation, 1933	40,000
Appropriation, 1934	25,000
Appropriation, 1935	28,500
Budget Estimate, 1936	28,500

PROJECT STATEMENT

Project	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease: 5% Salary Restoration	Increase or decrease: Working Funds
Obligated:					
Payment to the common school funds of Arizona and New Mexico on account of receipts from state lands administered as part of national forests.....	$28,456	$28,500	$28,500	- - -	- - -
Excess of obligations over estimates.....	- 3,456	- - -	- --	- - -	- - -
Total appropriation.....	25,000	28,500	28,500	- - -	

WORK DONE UNDER THIS APPROPRIATION

At the close of the year there is paid to the States of Arizona and New Mexico, such proportion of the gross proceeds of all the National Forests within those States, as the area of land granted to the States for school purposes within the National Forests bears to the total area of all National Forests within the States. The amount due Arizona and New Mexico for the fiscal year 1934, which must be paid during the fiscal year 1935 is $23,242.59. These payments are required by the Act of June 20, 1910, (36 Stat. 562 and 573) which require "that the grants of Sections two, sixteen, thirty-two and thirty-six to said State, within national forests now existing or proclaimed, shall not vest the title to said section in said State . . . . but said granted sections shall be administered as a part of said forests, and at the close of each fiscal year there shall be paid to the Secretary of State, as income for its common-school fund, such proportion of the gross proceeds of all the national forests within said State as the area of lands hereby granted to said State for school purposes which are situated within said forests reserves . . . . may bear to the total area of all the national forests within said State . . . . the amount necessary for such payments being appropriated and made available annually from any money in the Treasury

not otherwise appropriated".

It is estimated that the payment which will become due these States at the close of the fiscal year 1935 and which must be made from the 1936 appropriation, will be substantially the same if not greater than the 1935 payment.

Unless the law is changed this appropriation will have to be continued.

(r) ROADS AND TRAILS FOR STATES - NATIONAL FOREST FUND

Appropriation, 1932	$ 600,000
Appropriation, 1933	500,000
Appropriation, 1934	370,000
Appropriation, 1935	(a)
Budget Estimate, 1936	328,000
Increase, Budget 1936, compared with Appropriation, 1935	328,000

(a) Unobligated balance of $591,023 from prior year appropriations available for 1935. (See note "1" below).

PROJECT STATEMENT

Project	1934	(Estimated)	(Estimated)	Increase or decrease 5% Salary Restoration	Working Funds
Obligated:					
Construction and maintenance of roads and trails within the national forests.....	$57,562	(a)	$328,000	- - -	+$328,000(1)
Unobligated:					
Salary reduction impoundments.....	7,116	- - -	- - -	- - -	- - -
Other amounts unobligated.....	305,322	- - -	- - -	- - -	- - -
Total appropriation....	370,000	(a)	328,000	+328,000	

(1) The increase of $328,000 for 1936 is apparent only. While there was no budget estimate shown for 1935, there is, however, an unobligated balance of $591,023 of prior year appropriations available for use during 1935, of which amount it is estimated that $351,441 will be expended during that year. There is, therefore, contemplated an actual decrease of $23,441 in estimated expenditures under this item for 1936(from $351,441 in 1935 to $328,000 in 1936)

CHANGE IN LANGUAGE

It will be necessary to reinstate the language for this item in the Budget for the fiscal year 1936. The language was omitted in the Budget for fiscal year 1935 because of the existence of emergency appropriations for road and trail maintenance.

WORK DONE UNDER THIS APPROPRIATION

An additional 10 per centum of all moneys received from the national forests during each fiscal year is available at the end thereof, to be expended by the Secretary of Agriculture for the construction and maintenance of roads and trails within the national forests in the States from which such proceeds are derived. (U.S.C., title 16, sec. 501)

(s) COOPERATIVE WORK - FOREST SERVICE
(Trust Funds)

Appropriation, 1932	$ 1,700,000
Appropriation, 1933	1,700,000
Appropriation, 1934	1,676,545
Appropriation, 1935 . (approximate)	2,000,000
Budget Estimate, 1936	2,000,000

PROJECT STATEMENT

Project	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease: 5% Salary Restoration	Increase or decrease: Working Funds
Obligated:					
Construction of improvements.....	$1,130,919	$1,806,480	$1,806,480	- - -	- - -
Maintenance of improvements.....	49,629	40,000	40,000	- - -	- - -
Prevention and suppression of forest fires.....	35,280	83,520	83,520	- - -	- - -
Disposal of brush and other debris in timber sale operation..	47,707	50,000	50,000	- - -	- - -
Forest investigations	12,198	10,000	10,000	- - -	- - -
Administration.....	4,311	4,000	4,000	- - -	- - -
Reforestation.....	1,016	1,000	1,000	- - -	- - -
Refunds to cooperators.....	7,484	5,000	5,000	- - -	- - -
Total obligations....	1,288,544	2,000,000	2,000,000	- - -	- - -
Unobligated:	388,001	- - -	- - -	- - -	- - -
Total appropriation...	1,676,545	2,000,000	2,000,000	- - -	

Under the "Permanent Appropriation Repeal Act, 1934" approved June 26, 1934, this appropriation, heretofore carried as an indefinite appropriation, will be continued on the books of the Treasury as a trust fund, chargeable to the Department of Agriculture.

WORK DONE UNDER THIS APPROPRIATION

Contributions are made to the Forest Service by individuals, communities and associations for improvement work, fire control, forest investigations and slash disposal on timber sale areas, and are deposited to this fund. Expenditures are controlled by the Forest Service.

PASSENGER CARRYING VEHICLES

The authorization for purchase of passenger-carrying vehicles contemplates an increase of $12,220 ($37,090 in 1935; $49,310 estimated for 1936) for this purpose. As shown by the Budget schedule, the $49,310 would permit replacement of 45 vehicles at a net average cost of $537 each, when exchange allowances are taken into account, and the purchase of 39 additional vehicles at an average cost of $644 each.

The replacements are needed in order to obviate the continued use of worn-out cars at excessive maintenance costs.

Approximately 65% of the employees of the Forest Service do the major part of their work while actually in the woods and must necessarily be in a travel status a great part of their time. Where there are few roads in the forests, work must be performed largely by the use of privately-owned Government-maintained horses and employee-owned or hired cars paid for on a mileage basis. It is not economical for the Government to own cars where their use is limited and the annual mileage consequently low, but where roads and the work to be performed call for the greater part of travel by car, it is more economical for the Government to own the car than pay mileage. Mileage rates are based on actual operating costs of private owners and since the Government can purchase cars, repair parts, gasoline and oil at large discounts and pays no taxes or insurance, it can operate cars for much less per mile than the employee. As a substitute for horses in administration and fire control, the car is indispensable. With the development of roads in the forests, the fire hazard and use of such areas increase and the automobile has been largely instrumental in keeping abreast of such managerial problems. The policy has been the gradual substitution of a more efficient means of transportation for a less efficient one with little or no increase in the aggregate cost. It is recommended that this practice be continued as rapidly as funds will permit.

The purchase of additional cars included in these estimates will reduce the use of personally-owned cars which cost on the average 5 cents per mile for travel and 10 to 15 cents per mile for hauling in fire and other emergencies. They are needed to supply a few more field administrative officers with government-owned cars since now only a small percentage of the field officers are so supplied.

The 45 cars to be exchanged are cars or trucks which during the fiscal year 1936, will have been used for the maximum number of miles of economical operation.

EMERGENCY FUNDS

(1) Direct Allotments (Forest Service)

Projects	Obligated, 1934	Estimated obligations, 1935
Public Works Allotments (National Industrial Recovery Act):		
1. Permanent fire breaks	$903,065	$715,348
2. Lookout houses, towers, and observatories	295,221	217,679
3. Telephone lines for fire protection	446,462	353,556
4. Range fences, driveways and bridges, water development for stock	870,568	835,091
5. Public camp-ground improvement	322,439	283,779
6. Dwellings, barns and offices at isolated stations	465,947	446,832
7. Miscellaneous construction, including fences and water developments for administrative and research uses, landing fields, small buildings	569,946	363,298
8. Eradication of poisonous plants from national-forest ranges	90,339	86,631
9. White-pine blister rust control	1,189,995	515,164
10. Control of tree-destroying insects	190,761	119,122
11. Timber stand improvement	1,122,126	1,075,843
12. Planting and tree nurseries	349,830	138,369
13. Construction of buildings requiring legislation	325,143	311,805
14. Estimating timber resources	170,654	77,596
15. Revegetation of forest ranges	41,653	39,943
16. Rodent control	1,552	1,487
17. Erosion control	272,793	173,831
18. Improvement of forest waters for fish protection	86,865	83,321
19. Range surveys	85,224	35,123
20. Boundary surveys	31,703	19,797
21. Surveys needed for forest activities not including topographic quadrangles or General Land Office cadastral surveys	273,938	171,062
22. Research:		
Forest management	41,072	39,952
Range investigation	29,225	18,950
Forest economics	9,854	2,056
Forest survey	250,081	74,919
Soil erosion	26,622	7,963
Sub-total	8,463,128	6,208,517
Add amount to be used in lien of regular appropriations for:		
General administrative expenses	- - -	9,786
Protection and administration	- - -	441,184
Aerial fire control	- - -	12,487

Projects	Obligated, 1934	Estimated obligations, 1935
Classification of lands	- - -	$1,172
Sanitation and fire prevention	- - -	19,752
Planting on national forests	- - -	152,798
Reconnaissance	- - -	34,457
Improvements on national forests	- - -	142,179
Forest survey	- - -	118,543
Soil-erosion investigations	- - -	67,642
	$8,463,128	7,208,517

Total obligations, Forest Service, 1934-1935	15,671,645
Add amount transferred to Bureau of Biological Survey for rodent control on National Forests	296,100
Received by transfer from Federal Emergency Administration of Public Works (total allotment)	15,967,745
Estimated for 5% salary adjustments from fund authorized by Sec. 21 (e) of Act of March, 28, 1934	41,418
Total obligations	16,009,163

The estimated expenditures by States are given below.

Alabama	$17,560
Alaska	24,315
Arizona	991,000
Arkansas	299,809
California	2,246,599
Colorado	399,409
Connecticut	2,180
Florida	76,104
Georgia	108,808
Idaho	2,504,780
Illinois	21,980
Indiana	1,070
Kentucky	63,326
Louisiana	127,881
Maine	2,500
Michigan	633,217
Minnesota	782,525
Mississippi	175,765
Missouri	13,000
Montana	1,044,438
Nebraska	37,695
Nevada	111,502
New Hampshire	106,170
New Jersey	6,410
New Mexico	718,899
New York	$ 10,715
North Carolina	123,206
North Dakota	2,500
Ohio	1,100
Oklahoma	81,510
Oregon	803,733
Pennsylvania	95,730
Puerto Rico	- - -
South Carolina	53,561
South Dakota	120,183
Tennessee	116,134
Texas	21,000
Utah	351,845
Vermont	24,000
Virginia	85,941
Washington	689,697
West Virginia	151,250
Wisconsin	1,270,657
Wyoming	246,598
District of Columbia	201,443
Lieu of regular funds	1,000,000
Total allotment	$15,967,745

CIVIL WORKS FUNDS

Projects	Obligated, 1934
Civil Works projects:	
Improvement of National Forests and forest experiment station units	$26,907

LOANS AND RELIEF IN STRICKEN AGRICULTURAL AREAS
(Plains Shelterbelt Project)

Projects	Estimated Obligations, 1935
Loans and Relief in Stricken Agricultural Areas (Silviculture):	
For preliminary work relating to the establishment of a shelterbelt area in the Great Plains region	$964,000
Add amounts transferred to other bureaus of the Department	36,000
Total allotment	1,000,000

As a result of an Executive Order issued by the President of July 11, 1934, $1,000,000 has been allotted (Treasury Department Warrant of August 17), from the appropriation of $525,000,000 for "Loans and Relief in Stricken Agricultural Areas" for work in connection with shelterbelts in the drought-stricken areas of the prairie-plains States of North Dakota, South Dakota, Nebraska, Kansas, Oklahoma, and Texas.

The work done under this allotment is of two-fold character:

1. Scientific investigation and exploration into the localities and soils most suitable for planting trees. About $100,000 has been allotted for this kind of work. The investigations have been carried on by the Forest Service in cooperation with the Bureaus of Chemistry and Soils, Plant Industry, Biological Survey, Entomology and Plant Quarantine, and Weather Bureau. A report is now in preparation which should provide a scientific basis for the forest planting on a large scale in the prairie-plains section.

2. The administration and carrying out of the planting program itself; for this nine hundred thousand dollars has been made available. The work includes collection of seed from which the trees are to be raised, procurement of planting stock as far as possible from the commercial nurseries of the region; location of the strips to be planted next spring; leasing of the land from the farmers; the preparation of the ground; the actual planting of the trees; cultivation of the soil and fencing of plantations. All work is to be done by the farmers themselves.

Cooperation of the farmers is entirely on a voluntary basis.

Some 150 miles of such forest strips are to be planted next spring throughout the six prairie-plains States involving five to seven million trees. These strips are not to be continuous strips, but adjusted to local conditions and arrangement of the fields.

Since the planting of trees in the prairie-plains region is an emergency project which expires by the end of this fiscal year (June 30, 1935) no obligations or commitments have been made beyond the duration of the present emergency appropriation.

EMERGENCY FUNDS
(Forest Research)
(2) Projects Financed through other Governmental Agencies.

Projects			Obligated, 1934	Estimated obligations, 1935
Emergency Conservation Work (Authorized by Act of March 31, 1933: allotment through War Department) Research activities (as itemized below) to furnish information needed for properly directing the forest projects of the Civilian Conservation Corps.....			$173,083	$828,477
Project	Forest Management Research			
1	Allegheny Station,	Philadelphia, Pa.	1,250	4,050
2	Appalachian "	Asheville, N.C.	2,500	7,500
3	California "	Berkeley, Calif.	5,500	15,250
4	Central States "	Columbus, Ohio	2,500	8,250
5	Intermountain "	Ogden, Utah	1,000	2,550
6	Lake States "	St. Paul, Minn.	4,500	13,500
7	Northeastern "	New Haven, Conn.	3,250	9,750
8	Northern Roc.Mt.	Missoula, Mont.	4,500	14,500
9	Pacific N.W. "	Portland, Ore.	4,250	12,700
10	Southern "	New Orleans, La.	3,000	8,500
11	Southwestern "	Tucson, Ariz.	1,500	4,500
12	Region 2	Denver, Colo.	750	3,750
13	Washington, D.C.	.....	5,630	18,270
	Total.....		40,130	123,070
	Range Investigations			
1	California Station,	Berkeley, Cal.	5,000	15,000
2	Intermountain "	Ogden, Utah	7,000	21,000
3	Nor. Rocky Mt."	Missoula, Mont.	4,000	12,000
4	Southwestern "	Tucson, Ariz.	6,000	18,000
5	Washington, D.C.	.....	2,087	10,063
	Total.....		$24,087	$76,063

Project	Projects	Obligated, 1934	Estimated obligations, 1935
	Forest Economics		
1	Lake States, St. Paul, Minn.	- - -	$4,000
2	Pacific N.W. Portland, Ore.	$3,550	6,150
3	Southern Station, New Orleans, La.	2,155	7,465
4	Washington, D. C.	250	250
	Total	5,955	17,865
	Forest Survey		
1	California Station, Berkeley, Cal.	7,500	45,000
2	Lake States " St. Paul, Minn.	14,000	57,000
3	Nor. Rocky Mt. " Missoula, Mont.	7,500	35,500
4	Pacific N.W. " Portland, Ore.	12,500	43,500
5	Southern " New Orleans, La.	39,000	174,263
6	Washington, D. C.	5,118	5,119
	Total	85,618	360,382
	Soil Erosion Investigations		
1	Appalachian Station, Asheville, N.C.	1,140	19,120
2	California " Berkeley, Cal.	3,388	20,162
3	Intermountain " Ogden, Utah	6,750	29,250
4	Lake States " St. Paul, Minn.	500	3,500
5	Southern " New Orleans, La.	1,175	6,525
6	Southwestern " Tucson, Ariz.	3,750	16,250
7	Washington, D. C.	590	590
	Total	17,293	95,397
	Forest Products Investigations		
1	Forest Products Laboratory, Madison, Wis. ..	- - -	150,000
	Inspection CCC projects		
1	Allegheny Station, Philadelphia, Pa.	- - -	300
2	Appalachian " Asheville, N.C.	- - -	1,000
3	Central States" Columbus, Ohio.....	- - -	800
4	Intermountain " Ogden, Utah.....	- - -	1,000
5	Lake States " St. Paul, Minn.	- - -	600
6	Northeastern " New Haven, Conn.	- - -	300
7	Nor. Rocky Mt." Missoula, Mont.	- - -	200
8	Southern " New Orleans, La.	- - -	200
9	Southwestern " Tucson, Ariz.	- - -	1,300
	Total	- - -	5,700
	Total, ECW Research Funds.....	$173,083	$828,477

EMERGENCY FUNDS

(2) Projects Financed through other Government Agencies (cont'd)

Emergency Conservation Work. (Authorized by Act of March 31, 1933; allotment through War Department):

	1934	1935 (estimated)
1. Emergency Conservation Work on National Forests.....	$27,950,491	$24,684,302

Estimated obligations by States are given below:

	F.Y. 1934	F.Y. 1935
Alabama	226,140	199,003
Arizona	1,580,423	1,390,772
Arkansas	814,044	716,359
California	5,796,230	5,100,682
Colorado	611,370	538,006
Florida	335,389	295,142
Georgia	389,672	343,911
Idaho	3,250,533	2,860,469
Illinois	229,140	201,643
Kentucky	180,333	158,693
Louisiana	155,690	137,007
Maine	60,721	53,434
Michigan	661,944	582,511
Minnesota	726,960	639,725
Mississippi	349,176	307,275
Missouri	181,326	159,567
Montana	813,910	716,241
Nebraska	31,226	27,479
Nevada	179,403	157,875
New Hampshire	370,118	325,704
New Mexico	1,075,081	946,071
North Carolina	642,389	565,302
Oklahoma	188,820	166,162
Oregon	2,548,074	2,242,305
Pennsylvania	275,311	242,274
South Carolina	122,452	107,758
South Dakota	250,941	220,828
Tennessee	957,538	842,633
Texas	- - -	86,871
Utah	836,675	736,274
Vermont	91,783	80,769
Virginia	605,236	532,608
Washington	1,892,100	1,665,048
West Virginia	354,803	312,226
Wisconsin	703,540	619,115
Wyoming	462,000	406,560
Total	$ 27,950,491	$ 24,684,302

WORK DONE UNDER THIS ALLOTMENT

This allotment is used for the pay of supervisory and facilitating personnel necessary for the field work done from E.C.W. camps on National Forests; also for purchase of necessary equipment and construction materials and for miscellaneous expenses incident to the field work of the camps. The field work on the National Forests includes construction of physical improvements needed for protection and administration of the Forests, tree planting, thinning of young stands of timber, destruction of undesirable timber species, rodent control, etc.

	1934	1935 (Estimated)
2. Emergency Conservation Work in Alaska	$225,980	$163,577

WORK DONE UNDER THIS ALLOTMENT

This allotment (Alaska) is used for pay and allowances to dependents of enrolled members of the Civilian Conservation Corps and for salaries and wages of extra supervisory and clerical personnel needed in connection with the work. It is also used for purchase of clothing, subsistence, supplies and camp equipment required for enrolled men of the corps and for the purchase of construction materials used in the work. Classes of work done under this allotment include construction of trails, minor roads, bridges, water development and improvement and miscellaneous administrative improvements; roadside clearings and public camp ground improvement, estimating timber resources, and other miscellaneous work.

The men engaged in the work are recruited from the unemployed local residents without regard to age.

	1934	1935 (estimated)
(3) Emergency Conservation Work on State, municipal, and privately-owned land	$22,417,089	$19,615,931

Estimated obligations by States are given below:

	F.Y. 1934	F.Y. 1935
Alabama	$ 372,405	$ 325,854
Arkansas	264,001	231,001
California	1,043,047	912,666
Connecticut	590,605	516,779
Delaware	47,034	41,155
Florida	448,370	392,324
Georgia	844,764	739,169
Idaho	596,444	521,889
Illinois	356,336	311,794
Indiana	717,611	627,910
Iowa	509,259	445,602
Kansas	322,618	282,291
Kentucky	510,323	446,533
Louisiana	528,279	462,244
Maine	437,222	382,569
Maryland	276,023	241,520
Massachusetts	729,014	637,887
Michigan	1,299,868	1,138,362
Minnesota	681,551	596,357
Mississippi	274,888	240,527
Missouri	220,143	192,625
Montana	45,607	39,906
Nebraska	54,283	47,498
Nevada	71,535	62,593
New Hampshire	189,389	165,715
New Jersey	333,359	291,689
New Mexico	39,562	34,617
New York	762,094	666,832
North Carolina	326,645	285,814
North Dakota	177,631	155,427
Ohio	646,015	565,263
Oklahoma	395,931	346,440
Oregon	378,941	331,573
Pennsylvania	2,879,461	2,519,528
Rhode Island	160,384	140,336
South Carolina	568,042	479,037
South Dakota	77,880	68,145
Tennessee	452,146	395,628
Texas	778,141	680,873
Utah	274,732	240,391
Vermont	427,091	373,705
Virginia	651,273	569,864
Washington	430,716	376,877
West Virginia	269,497	235,810
Wisconsin	948,245	829,714
Wyoming	8,684	7,598
Total	22,417,089	19,615,931

WORK DONE UNDER THIS ALLOTMENT

This allotment is used for the payment of expenses incurred by States in the conduct of Emergency Conservation Work on State, Municipal, and privately-owned lands, including the purchase of supplies, material and equipment used in the work and for payment of salaries and wages of supervisory personnel directing the work of the enrolled men, and for other necessary expenses incident to the work.

Work being accomplished under this allotment includes such important conservation efforts as the following: Protection of State and private forest land from fire, by construction of fire breaks, lookout towers, communication systems, truck trails, tool sheds, guard houses, and the fighting of forest fires; protection of State and privately-owned forests from epidemic spread of forest insects and tree diseases, forest cultural measures to improve the forest growth on State-owned land, and the construction of simple dams and the planting of trees, grass, etc., for the control of erosion and flash run-off at the head waters of streams.

	1934	1935 (Estimated)
4. Emergency Conservation Work on Oregon and California R.R. Grant Lands	$339,627	$318,434

WORK DONE UNDER THIS ALLOTMENT

This allotment is used for the pay of supervisory and facilitating personnel necessary for the field work done from E.C.W. camps on revested O. & C. lands in Oregon; also for purchase of necessary equipment and construction materials and miscellaneous expenses incident to such field work. The field work was done to make possible more effective fire protection on these publicly owned timber lands.

	1934	1935 (Estimated)
5. Emergency Conservation Work in Puerto Rico	$265,011	$325,448

WORK DONE UNDER THIS ALLOTMENT

This allotment (Puerto Rico) is used for the payment of 1,200 authorized enrollees, the supervisory personnel engaged in the technical direction of the work projects on the Luquillo National Forest and the Insular Forests and for the purchase of equipment and supplies incident to the work.

The work projects comprise the construction and maintenance of roads and trails, the production of nursery stock, the making of new and the thinning of old forest plantations, forest thinnings to improve the timber stands within the National and Insular Forests and the development of a recreational area within the National Forest.

With a population of 1,500,000 the unemployment situation on the Island has been acute and since the enrollment of the 1,200 men has been on a pro rata basis from the 72 Insular municipalities, the E.C.W. work has played its part in giving a measure of relief.

Camps are not established as they are in the States since a large proportion of the enrollees live at home and go to and from the work projects.

	1934	1935 (estimated)
6. Emergency Conservation Work on Navy Department reservations	$70,078	$ 118,508

WORK DONE UNDER THIS ALLOTMENT

This allotment is used for the pay of supervisory and facilitating personnel necessary for field work done from E.C.W. camps located on Navy Department reservations, such as Bremerton, Hawthorne and Indian Head; also for the purchase of the necessary equipment and construction materials and for miscellaneous expenses incident to the field work of the camps. The field work includes construction of fire breaks, reduction of fire hazards, fire presuppression, forest stand improvement, truck trails, fences and landing fields.

	1934	1935 (estimated)
7. Emergency Conservation Work in drouth-stricken agricultural areas	- - -	$7,656,000

Estimated obligations by States are given below:

DROUGHT RELIEF

	Fiscal Year, 1935
Arizona	$ 290,076
California	1,257,852
Colorado	249,300
Idaho	32,844
Illinois	697,968
Indiana	112,896
Iowa	344,184
Kansas	146,484
Minnesota	493,332
Missouri	156,492
Montana	399,408
Nebraska	198,012
Nevada	17,772
New Mexico	82,776
North Dakota	498,540
Oklahoma	10,812
Oregon	5,268
South Dakota	759,324
Texas	161,400
Utah	545,484
Wisconsin	1,183,164
Wyoming	12,612
Total	$7,656,000

WORK DONE UNDER THIS ALLOTMENT

This allotment is used to pay for the supervisory and facilitating personnel necessary for the field work done from the additional camps in the drouth-stricken agricultural areas; also for the purchase of the necessary equipment and construction materials and for miscellaneous expenses incident to the field work of the camps. The field work consists of the same general kind of work done by other camps on the National Forests and on State and municipal lands in the States in which these drought-relief camps are located and in some instances the drought allotment enrollees are enrolled in the regular National Forest on State land camps.

	1934	1935 (Estimated)
8. Emergency Conservation Work - Acquisition of Additional forest lands	$14,535,173	$5,464,827 (a)

(a) In addition, $10,000,000 has been allotted for this purpose subsequent to the preparation of the 1936 budget.

The President, by Executive Orders of July 21, 1933, and December 1, 1934, allotted for acquisition of forest lands $30,000,000 of the funds made available under the Emergency Conservation and National Industrial Recovery Acts.

WORK DONE UNDER THIS ALLOTMENT

The work to be done includes the following two classes: (1) General field examinations to determine areas within which forest land purchases should be made; compilation of basic title data such as original colonial grants and ensuing transfers; compilation of lists of land owners; solicitation of offers of lands; examinations; cruises, mapping and appraisal of offered lands and preparation of reports thereon; initiation of plans and programs of protection, development, management and administration: (2) Compilation of reports for consideration and action by National Forest Reservation Commission; verification of titles to lands approved for purchase and transmittal to Attorney General for approval; assumption of full control over acquired lands and actual application thereto of all principles of National Forest management, including timber sales, other uses of natural resources, protection against fire, insects and diseases, silvicultural operations, etc.

EMERGENCY FUNDS - BUREAU TOTAL

Summary

Projects	Obligated, 1934	Estimated obligations, 1935
(1) Direct allotments:		
Public Works Allotments (National Industrial Recovery Act):		
Physical improvements, control of tree-destroying insects and diseases, and forestry research	$8,463,128	$6,208,517
Add amount to be used in lieu of regular appropriations, 1935	- - -	1,000,000
Total (a)	8,463,128	7,208,517
Civil Works Allotments (National Industrial Recovery Act):		
Improvement of National Forests and forest experiment station units.....	26,907	- - -

(a) Exclusive of $296,100 transferred to Bureau of Biological Survey for rodent control on National Forests.

Projects	Obligated, 1934	Estimated obligations, 1935
Loans and Relief in Stricken Agricultural Areas:		
Preliminary work relating to the establishment of a shelterbelt area in the Great Plains region..	- - -	$1,000,000
Total, Direct Allotments -	$ 8,490,035	$8,208,517
(2) Indirect Allotments:		
Emergency Conservation Work:		
Research activities to furnish information needed for directing forest projects of the Civilian Conservation Corps.....	173,083	828,477
On National Forests	27,950,491	24,684,302
In Alaska	225,980	163,577
On State, municipal, and privately-owned lands	22,417,089	19,615,931
On Oregon and California Railroad Grant Lands	339,627	318,434
In Puerto Rico	265,011	325,448
On Navy Department Reservations....	70,078	118,508
In Drought-Stricken Agricultural Areas	- - -	7,656,000
(a)Acquisition of Additional Forest Lands	14,535,173	5,464,827
Total, Emergency Conservation Work (Indirect Allotments).....	65,976,532	59,175,504
Total Emergency Funds	74,466,567	67,384,021

(a) While this item is listed here as an indirect allotment, it is, nevertheless, made available to the Department for direct expenditure.

BUREAU OF CHEMISTRY AND SOILS

(a) GENERAL ADMINISTRATION

Appropriation, 1932	$ 97,600
Appropriation, 1933	96,720
Appropriation, 1934	89,903
Appropriation, 1935	88,499 (a)
Budget Edtimate, 1936	90,241
Increase, Budget 1936, compared with Appropriation, 1935	1,742 (b)

(a) Includes $4,097 to cover 5% salary adjustment for 1935 (to 95%), as follows:
(1) $1,782 transferred from Bureau of Animal Industry; and (2) $2,315 from fund authorized by Sec. 21(e) of Act of March 28, 1934.

(b) Increase of $1,742 compared with 1935 appropriation consists of -

5% salary restoration, 1936 (to 100%)	+ $4,157
Reduction: Transfer to Interior Department for cleaning service	- 2,415
	+ 1,742

PROJECT STATMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease: 5% Salary Restoration	Increase or decrease: Working Funds
Obligated:					
General Administration	$79,517	$88,499	$90,241	(1) $4,157	-$2,415(2)
Unobligated:					
Salary reduction impoundments.....	3,511	---	---	---	---
Other legislative impoundments.....	3,709	---	---	---	---
Other amounts unobligated.....	3,166	---	---	---	---
Total appropriation..	89,903	88,499	90,241	+ 1,742	

The increase of $1,742 for 1936 includes:

(1) An increase of $4,157 for 5% salary restoration, 1936 (to 100%).

(2) A decrease of $2,415, by transfer to Interior Department for cleaning service.

WORK DONE UNDER THIS APPROPRIATION

This appropriation provides for the salaries and expenses of the office of the Chief of Bureau and the business organization units such as Accounting, Personnel, Editorial, Supplies, etc. It is for the purpose of maintaining general administration and direction of the Bureau.

(b) AGRICULTURAL CHEMICAL INVESTIGATIONS

Appropriation, 1932	$501,075
Appropriation, 1933	453,699
Appropriation, 1934	410,000

Appropriation, 1935	327,041 (a)
Budget Estimate, 1936	338,930
Increase, Budget 1936, compared with Appropriation, 1935	11,889 (b)

(a) Includes $7,500 carried in Deficiency Act, June 19, 1934; and $14,671 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) $6,382 transferred from Bureau of Animal Industry; and (2) $8,289 from fund authorized by Sec. 21(e) of Act of March 28, 1934.

(b) Increase of $11,889 compared with 1935 appropriation consists of -

5% salary restoration, 1936 (to 100%)	+ $15,329
Reductions: Continuation of 1935 impoundment . .	- 1,000
Transfer to Interior Department for cleaning service	- 2,440
	+ 11,889

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease: 5% Salary Restoration	Increase or decrease: Working Funds
Obligated:					
Carbohydrates.....	$64,939	$62,835	$65,110	$ 2,745	- $470
Food Research.....	93,876	97,155	101,195	4,765	- 725
Fruit and Vegetable Utilization.....	47,557	47,630	49,365	2,090	- 355
Industrial Farm Products.	68,790	62,005	64,425	2,885	- 465
Lignin.....	9,413	8,910	9,295	450	- 65
Oil, Fat, and Wax.....	8,430	9,046	9,430	454	- 70
Protein and Nutrition....	26,258	25,515	26,610	1,285	- 190
Farm Fires.....	12,226	12,945	13,500	655	- 100
Total Obligations.....	331,489	326,041	338,930	(1) 15,329	-2,440(2)
Unobligated:					
Salary reduction impoundment.....	14,778	---	---	---	---
Other legislative impoundments.....	6,648	1,000	---	---	-1,000(3)
Other amounts unobligated.....	57,085	---	---	---	---
Total appropriation.....	410,000	327,041	338,930	+ 11,889	

The increase of $11,899 for 1936 includes:

(1) An increase of $15,329 for 5% salary restoration, 1936 (to 100%).

(2) A decrease of $2,440 by transfer to Interior Department for cleaning service.

(3) A reduction of $1,000, continuing 1935 impoundment.

WORK DONE UNDER THIS APPROPRIATION

General. The work under this appropriation comprises a broad program of agricultural chemical and technological research with the objectives of widening markets for farm products through the development of more extensive industrial uses; improvement in quality and better adaptation of products to market requirements; profitable utilization of farm by-products, wastes, and surpluses; discovery of uses for hitherto unutilized plants and new uses for minor crops in order to substitute these for overproduced crops; development and substitution of domestic for imported products; and reduction of losses from spoilage, deterioration, and from destruction by fire. This work involves fundamental research on the chemical nature of the numerous organic and inorganic constituents of agricultural products, and technological application of the knowledge thus acquired to the solution of practical problems. The work includes:

Carbohydrate investigations. This work consists of chemical and technological research on the carbohydrate constituents of crops and derived farm products whose value is determined largely by their carbohydrate content, such as sugarcane, sugar beets, honey, maple products, farm-made sugarcane and sorghum sirups, potatoes and other starchy plants, and plants containing miscellaneous carbohydrates, for the purpose of obtaining better adaptation to market requirements and originating new and diversified uses, both for the crops and for the accompanying culls and wastes, thus promoting more complete utilization and greater farm value. Carbohydrates constitute about 80% of the dry matter of plants. The object of the work is to increase farm income from these crops and products by promoting wider and more profitable markets. The following are specific examples of this work: Devising a method for the profitable production of high-grade starch from cull sweet potatoes (comprising 10% to 30% of the crop), making possible the substitution of this starch for imported potato starch and materially increasing the growers' income from sweet potatoes; improving methods of production of farm-made sirups (sugarcane, sorghum and maple) to obtain better and more uniform quality, so that farmers may obtain a better price for the 40,000,000 gallons of annual production which now sells at prices varying by as much as 300%, depending on quality; developing an improved method of storage of sugarcane, which will greatly reduce the serious loss of harvested cane which occurs between cutting and grinding in the continental United States because of adverse weather conditions; devising new uses for chicory and other crops, thus providing non-competitive crops with assured markets for utilization of some of the land withdrawn from overproduced crops and also increasing crop diversification. This work is particularly suited to the present needs of agriculture.

Food research. This project involves chemical, biochemical and microbiological studies of food stuffs in all phases, from the food plants and raw materials to the manufactured or prepared products, in relation to problems

of food spoilage and deterioration, food preservation, and food utilization. Among the more important lines of work being conducted are research on the microbial spoilage of food products, a type of deterioration affecting great quantities of foodstuffs, and causing millions of dollars loss annually, and especially important to the preservation of fruits and vegetables; development of cultures and the most suitable environmental conditions for the fermentation of fruits, fruit juices, and other agricultural products into alcoholic beverages, and a study of the changes taking place in the natural and artificial aging of such products; determination of the toxic effects which may result from consumption of foods contaminated with sprays, fumigants, food preservatives, or metals which occur naturally in foods or as a result of manufacturing processes; effect of certain wave lengths of light on rancidity and other qualities of foods; better utilization of cereals and cereal by-products and the retardation of the staling of baked products; improving the quality of malt; development of methods to prevent deteriorative changes in eggs during storage; isolation and identification of special constituents of plant products, of fundamental value both in nutrition and in connection with various methods of food preservation; study of natural surface covering constituents which are important in the application and removal of sprays, to keeping quality of fruits and vegetables, and as potential by-products from wastes such as apple pomace; study of color formation in fresh and preserved foods, a factor affecting nutritional value and marketability; and research on the nature of enzymes and their relation to growth, spoilage, curing, and preservation of agricultural products.

Fruit and vegetable utilization. These investigations are concerned with the economical utilization of fruit and vegetable culls and crop surpluses; development of valuable by-products; preservation by various methods such as canning, freezing, drying, fermentation, or by chemical treatments; and utilization of food manufacturing wastes. The portion of the fruit crop graded as culls often constitutes from 20% to 30% of the total crop and represents that much loss unless methods of profitable utilization are developed. In years of overproduction the disposal of the surplus in the form of by-products also acts to stabilize the fresh fruit market. The satisfactory preservation of various fruit juices continues to be an important problem to the fruit industry. The type of fruit suitable for juice extraction is not suitable for direct sale, yet is of the highest degree of palatability and dietary utility. Of similar importance is the preservation of pulp fruit by freezing. Other studies being conducted are on the ethylene treatment of fruits and vegetables; the detection of frost damage to citrus fruits; the commercial phases of the production of alcoholic beverages from fruits. These investigations are carried on at field laboratoes in California, Florida, and Texas, where abundant raw materials are readily available and where the problems can be studied in relation to regional conditions.

Industiral farm products investigations. This work includes chemical and technological research on hides and skins, tanning materials, leather, farm fabrics, paper, and on the industrial utilization of ligno-cellulose farm wastes. The objects of the investigations on leather-making materials are to reduce losses aggregating millions of dollars annually from improper handling and curing of hides and skins and from damages such as "reddening" and salt stains, which can be accomplished only through a clearer scientific

knowledge of the chemical, physical and microbiological processes involved; to develop new sources of tannin to replace that now obtained from the American chestnut tree which faces certain extinction by blight; to study tanning processes using different tanning materials, and the utility for various purposes of leather made with different tanning materials; and to increase the serviceability of leather. The farm fabric studies involve the development of flame-proofing, water-proofing and mildew-proofing treatments for canvas, tobacco shade cloth and other outdoor fabrics used on farms. Paper investigations are conducted on deterioration of paper and devising means for making more permanent paper for record purposes. The economic utilization of farm by-products such as corn-stalks, straw, bagasse, and grain hulls is a problem of prime importance in increasing net returns from crops, and comprehensive investigations of the possibilities of using these materials for a variety of purposes are being made in cooperation with the Iowa State College.

Lignin investigations. This work consists of studies of the chemistry of lignin with a view to applying the information obtained to the economic utilization of this material of which more than 40,000,000 tons annually are available in numerous types of farm wastes and in the wastes from paper mills and woodworking industries. Lignin from various sources is being subjected to different reactions to obtain knowledge of its constitution to enable the preparation of synthetic products. Studies are also made of the ammoniation of waste sulphite liquor as a possible source of fertilizer. Determination of the fundamental structure of lignin is an essential prerequisite to its proper industrial utilization.

Oil, fat, and wax investigations. This project involves investigations of the characteristics and composition of vegetable oils, fats, and waxes for the purpose of their more efficient and profitable utilization. Those from new sources are examined to ascertain their nature, for what purpose they are suited, and whether or not their commercial production would be feasible. Utilization of oil-producing by-products from both farm and factory are investigated. New soybean varieties are studied in collaboration with the Bureau of Plant Industry to determine what varieties yield oils of the highest edible and technical value in order that the farmer may secure the highest cash return for his crop. Analytical methods are devised or developed in connection with the grading of commercial oil seeds, for the more exhaustive investigation of fats and oils, and for the detection of adulterants.

Protein and nutrition investigations. Under this project chemical and biological investigations are made of the nutritive value of foods and feeds with particular reference to their protein and vitamin content, two of the most highly important elements in human and animal nutrition. Although proteins constitute a most important dietary factor, less is known about them than about any of the other basal food factors. These investigations include isolation of the proteins from the raw materials, determination of their properties, composition, and digestibility, and studies on methods of anlysis of proteins and their constituent amino acids. Determination of the supplementary food value of proteins with respect to each other results in our agricultural food crops being utilized more profitably by the farmer in animal production and to better advantage in connection with problems bearing on human nutrition and welfare. Investigations of vitamins include methods and technique of vitamin assay and studies of the effects upon vitamins of certain commercial processes

used in the manufacture of food products. Cooperative work is conducted with the Food and Drug Administration to develop information on vitamins necessary for public officials in enforcement and regulatory work.

Farm fire investigations. Work under this project consists of chemical and engineering research on methods for the prevention of self-heating of agricultural products and investigations to develop equipment and methods for the prevention and control of farm fires. Spontaneous ignition of hay results in an annual fire loss on farms of the United States of approximately $20,000,000; in addition, there is a loss of about $40,000,000 from hay spoilage caused by abnormal self-heating not followed by fire. The farm fire loss from all causes amounts to over $100,000,000 in property and 3,500 lives each year. Close contact is maintained with farmers' organizations, fire prevention associations, and agricultural experiment stations in the practical application of the results of this research work and in the preparation of protective measures.

EMERGENCY FUNDS

Direct Allotments

Projects	Obligated, 1934	Estimated obligations, 1935
Public Works allotments (National Industrial Recovery Act):		
Painting Citrus Products Laboratory at Weslaco, Texas	$ 179	- - -
Construction of Agricultural By-Products Laboratory at Ames, Iowa	46,596	$ 23,404
Total, P.W.A. allotments	46,775	23,404
Agricultural Adjustment Administration (transferred to Bureau of Chemistry and Soils):		
For special chemical studies relating to the expansion of markets for tobacco and sugar...	1,517	915

(c) COLOR INVESTIGATIONS

Appropriation, 1932.	$ 93,460
Appropriation, 1933.	75,000
Appropriation, 1934.	69,000
Appropriation, 1935.	66,510 (a)
Budget Estimate, 1936.	69,757
Increase, Budget 1936, compared with Appropriation, 1935.	3,247 (b)

(a) Includes $3,255 to cover 5% salary adjustment for 1935 (to 95%), as follows:
(1) $1,416 transferred from Bureau of Animal Industry; and
(2) $1,839 from fund authorized by Sec. 21(e) of Act of March 28, 1934.

(b) Increase of $3,247 compared with 1935 appropriation represents 5% salary restoration, 1936 (to 100%)

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease: 5% Salary Restoration	Increase or decrease: Working Funds
Obligated:					
Color and fermentation investigations.....	$61,132	$66,510	$69,757	(1) $3,247	---
Unobligated:					
Salary reduction impoundments.....	2,762	---	---	---	---
Other amounts unobligated.....	5,106	---	---	---	---
Total appropriation....	69,000	66,510	69,757	+ 3,247	

(1) Increase of $3,247 for 5% salary restoration, 1936 (to 100%)

WORK DONE UNDER THIS APPROPRIATION

Work under this appropriation includes chemical research on the development of new color substances particularly applicable to American agricultural materials such as cotton, the synthetic cellulose fibers, and wool; investigations to increase the use of these materials by the development of more economical methods of production of dyes especially applicable to them, thereby broadening the market for cotton and wool; fundamental research on the utilization of agricultural crops and by-products by mold fermentation processes for the production of valuable chemical compounds not readily obtainable by other means; development and standardization of biological stains

required in the study of plant and animal diseases, in the examination of water, milk, soils and many agricultural products, as well as in medicine and in all branches of biological sciences; and cooperative investigations with other bureaus and agencies in the preparation, examination, and utilization of color substances and other products used or produced in their investigations. The maintenance of a reliable and continuous source of essential dyes, stains, and chemicals is to a large extent dependent on these researches.

EMERGENCY FUNDS

Direct Allotments

Projects	Obligated, 1934
Public Works allotments (National Industrial Recovery Act):	
Reroofing color laboratory	$2,693
Painting color laboratory	1,000
Installing window controls	21
Total, P.W.A. allotments	3,714

(d) INSECTICIDE AND FUNGICIDE INVESTIGATIONS

This item transferred to and shown under Bureau of Entomology and Plant Quarantine in estimates for 1936.

(e) PLANT DUST EXPLOSIONS

Appropriation, 1932.	$ 36,500
Appropriation, 1933.	36,190
Appropriation, 1934.	33,880
Appropriation, 1935.	33,224 (a)
Budget Estimate, 1936.	34,881
Increase, Budget 1936, compared with Appropriation, 1935.	1,657 (b)

(a) Includes $1,612 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) $701 transferred from Bureau of Animal Industry; and (2) $911 from fund authorized by Sec. 21(e) of Act of March 28, 1934.

(b) Increase of $1,657 compared with 1935 appropriation represents 5% salary restoration, 1936 (to 100%).

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease: 5% Salary Restoration	Increase or decrease: Working Funds
Obligated:					
Plant dust explosions..	$29,254	$33,224	$34,881	(1) $1,657	---
Unobligated:					
Salary reduction impoundments.....	1,152	---	---	---	---
Other legislative impoundments.....	62	---	---	---	---
Other amounts unobligated.....	3,412	---	---	---	---
Total appropriation.....	33,880	33,224	34,881	+ 1,657	

(1) Increase of $1,657 is for 5% salary restoration, 1936 (to 100%)

WORK DONE UNDER THIS APPROPRIATION

Work under this appropriation consists of studies of dust explosions and explosion hazards in grain-handling operations and in industrial plants handling products of agricultural origin; experimental chemical research and development work on the prevention of dust explosions and resulting fires, including fires in cotton gins, cotton oil mills, and grain elevators; and the practical application of the results of the research. Special attention is being given to the development of safety codes for dust explosion prevention. Active cooperation is carried on with industrial companies, insurance organizations, State commissions, fire prevention associations, safety organizations, and other interested agencies. These investigations are directly concerned with the saving of human life and property. Over 1,250,000 persons are normally employed in about 28,000 industrial establishments handling products of agricultural origin where dust explosions constitute a hazard. With practically every new development for the utilization of agricultural products, it is necessary to work out new methods for protection from dust explosions.

EMERGENCY FUNDS

Direct Allotment

Projects	Obligated, 1934
Public Works allotment (National Industrial Recovery Act):	
Painting dust explosion building	$ 75

(f) NAVAL STORES INVESTIGATIONS

Appropriation, 1932	$ 72,306	
Appropriation, 1933	68,406	
Appropriation, 1934	65,106	
Appropriation, 1935	59,330	(a)
Budget Estimate, 1936	61,741	
Increase, Budget 1936, compared with Appropriation, 1935	2,411	(b)

(a) Includes $2,165 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) $942 transferred from Bureau of Animal Industry; and (2) $1,223 from fund authorized by Sec. 21(e) of Act of March 28, 1934.

(b) Increase of $2,411 compared with 1935 appropriation represents 5% salary restoration, 1936 (to 100%).

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease: 5% Salary Restoration	Increase or decrease: Working Funds
Obligated					
Composition, properties and uses of naval stores	$13,580	$19,685	$20,544	$ 859	---
Production, processes and equipment (Naval Stores Station, Lake City, Fla.)	41,600	39,645	41,197	1,552	---
Total obligations	55,180	59,330	61,741	(1) 2,411	---
Unobligated:					
Salary reduction impoundments	1,793	---	---	---	---
Other legislative impoundments	1,470	---	---	---	---
Other amounts unobligated	6,663	---	---	---	---
Total appropriation	65,106	59,330	61,741	+ 2,411	

(1) Increase of $2,411 is for 5% salary restoration, 1936 (to 100%)

WORK DONE UNDER THIS APPROPRIATION

General. The purposes of the work under this appropriation are to improve agricultural-chemical-technological practices, processes, and equipment for the production of turpentine, rosin, and related products so as to prevent

deterioration and waste, reduce costs of production, and obtain products of better quality; to promote the utilization of turpentine and rosin and related products through fundamental studies of their chemical composition and properties, and through applied chemical research to develop processes and equipment for improving established products and especially to develop new uses for the prospective great increase in production that is going to be available within a few years. These investigations bring greater returns to the turpentine farmer and have a direct bearing on the economic maintenance of the pine forests of the South; they will also help to keep submarginal lands out of other agricultural crops for which they are neither suited nor needed. The recently established naval stores experiment station in the Osceola National Forest offers facilities not available elsewhere for research on the technology of naval stores production in cooperation with the forest management research of the Forest Service.

Composition, properties and uses of naval stores. The work under this project includes study of the chemical and physical properties of turpentine, rosin, and other naval stores as related to methods of production, handling, and storage and requirements for particular uses; development of new uses for turpentine, rosin, and other naval stores products; devising accurate methods for determining the constituents and analytical constants of these materials to be used for the preparation of correct specifications therefor; and collecting, compiling, and disseminating information relative to naval stores. Only about half of the annual production of naval stores is used in this country; the rest is exported. Research on the composition and properties of naval stores is necessary to expand uses and to insure greater suitability to the needs of consuming industries, with the consequent benefit of enlarged markets to the turpentine farmer.

Production, processes, and equipment (Naval Stores Station, Lake City, Fla.) The investigations at the Naval Stores Station include study of the equipment and methods used in making turpentine and rosin with the object of making products of the highest quality and best suited for the several uses to which each is put; determination of costs of production; adaptation of products to old and to new uses, and development and testing of new equipment and new processes. Naval stores are produced at over 1,400 individual stills throughout the turpentine producing area. Most of the stills are very primitive, and the methods used are wasteful and damaging to the products. The Station will serve as an original source of information where the problems of the individual producers can be solved and where the producer can be instructed and trained in better methods of production and in the operation of the best types of equipment.

EMERGENCY FUNDS

Direct Allotment

Projects	Obligated, 1934	Estimated obligations, 1935
Public Works allotment (National Industrial Recovery Act):		
Construction of laboratory and office building, machine shop, warehouse, fence, platforms, roadway and ditches, Naval Stores Station, Lake City, Fla.	$17,569	$11,454

(g) FERTILIZER INVESTIGATIONS

Appropriation, 1932.	$ 370,835
Appropriation, 1933.	358,535
Appropriation, 1934.	325,000
Appropriation, 1935.	258,270 (a)
Budget Estimate, 1936.	269,595
Increase, Budget 1936, compared with Appropriation, 1935.	11,325 (b)

(a) Includes $12,199 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) $5,306 transferred from Bureau of Animal Industry; and (2) $6,893 from fund authorized by Sec. 21 (e) of Act of March 28, 1934.

(b) Increase of $11,325 compared with 1935 appropriation consists of -

5% salary restoration, 1936 (to 100%)	+ $12,325
Reduction: Continuation of 1935 impoundment . . .	- 1,000
	+ 11,325

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease: 5% Salary Restoration	Increase or decrease: Working Funds
Obligated:					
Catalysts in nitrogen fertilizer investigations.....	$32,046	$30,955	$32,440	$1,485	---
Transformation of nitrogen compounds....	32,453	32,800	34,370	1,570	---
Biochemical and organic nitrogen fertilizer investigations.....	26,064	25,175	26,380	1,205	---
Physics and chemical fertilizer investigations.....	56,080	54,100	56,690	2,590	---
Phosphate fertilizer investigations.....	28,801	22,915	24,015	1,100	---
Potash fertilizer investigations.....	34,075	32,920	34,500	1,580	---
Concentrated fertilizer investigations.....	59,223	58,405	61,200	2,795	---
Total obligations.....	268,742	257,270	269,595	(1)12,325	---
Unobligated:					
Salary reduction impoundments.....	10,460	---	---	---	---
Other legislative impoundments.....	11,957	1,000	---	---	-1,000(2)
Other amounts unobligated.....	33,841	---	---	---	---
Total appropriation.....	325,000	258,270	269,595	+ 11,325	

The increase of $11,325 for 1936 includes:

(1) An increase of $12,325 for 5% salary restoration, 1936 (to 100%).

(2) A reduction of $1,000, continuing 1935 impoundment.

WORK DONE UNDER THIS APPROPRIATION

General. Work under this appropriation consists of investigations on nitrogen, phosphate, and potash fertilizers in relation to problems of reduction in cost of production, development and conservation of domestic sources and improvement in quality of products to insure farmers in all sections of the country an adequate and continuous supply of satisfactory fertilizer materials at the lowest possible cost. The farmers of the United States normally use from 7,000,000 to 8,000,000 tons of commercial fertilizer annually at a cost of approximately $250,000,000. The research is directed toward the development of more efficient and economical manufacturing processes; production of new fertilizer compounds; improvement in the quality of fertilizer materials to give maximum beneficial effects to crops and soils and improvement in the physical condition to facilitate handling and distribution in the field; increasing the concentration of fertilizers to reduce transportation costs; utilization of new sources of raw materials, of low-grade materials formerly wasted, and of by-products from other industries; and development of domestic deposits of fertilizer minerals in different sections of the country to make them available for use to the agricultural sections near which they occur. The solution of these main problems also calls for the use of much fundamental chemical and physical data which can be developed only by a comprehensive research program. The work includes:

Catalysts in nitrogen fertilizer investigations. Research under this project is largely concerned with the study of the factors which influence and determine the activities of catalysts used in the various steps of processes for converting atmospheric nitrogen into nitrogenous fertilizer materials. Catalysts play a very important part in these reactions as is well illustrated in the synthesis of ammonia; a mixture of hydrogen and nitrogen will not combine to form ammonia under any known conditions of temperature or pressure unless certain substances called catalysts are present. The fundamental study of the various catalysts and catalytic reactions pertaining to present and potential nitrogen fixation processes will establish a sound basis for safeguarding and introducing improvements into the present American fixed nitrogen industry.

Transformation of nitrogen compounds. The nitrogen fixation industry produces principally ammonia with by-product carbon dioxide, both gaseous at ordinary conditions. To utilize ammonia for fertilizer it must be converted into non-gaseous compounds with suitable properties. A method developed for utilizing the two gases produces urea, a compound containing 46% nitrogen and of proven fertilizer value. Studies are being made to overcome its single important defect, high moisture absorption. A method of avoiding this is used commercially by employing directly in mixtures urea dissolved in water and ammonia, but this method is of limited utility. Treating peat with ammonia offers attractive possibilities, since the product carries nitrogen up to 20%. The physical properties make the product desirable as a conditioner in concentrated inorganic mixtures. By combining the synthesis of urea and the ammoniation of peat a non-caking product containing up to 65% urea or 35% ni-

trogen is obtained. This furnishes urea as a solid material suitable for fertilizer mixtures. Studies are being made of the compounds formed in ammoniated peat with a view to modifying the process in such manner as to produce a more readily available form of nitrogen. Results obtained furnish information on nitrogen combinations present and suggest improvement in the product.

Biochemical and organic nitrogen fertilizer investigations. The research work of this project is largely concentrated on the study of the mechanism of nitrogen fixation by living organisms. Special attention is being given to the enzymes involved and many of their physical and chemical properties are being determined. The work deals with such problems as the determination of the effect of hydrogen-ion concentration; the rate of fixation at varying pressures of nitrogen and oxygen gases; the relation of oxidation-reduction potentials to growth and nitrogen fixation; energy requirements for fixation; and the mineral elements essential in the catalytic process as well as their mode of action. A new respiration coenzyme, recently isolated and found to be essential for certain bacterial species, is being studied further. An attempt is being made to separate the enzymes involved directly in the nitrogen fixation and thus bring about fixation apart from the living organisms. Another phase of the work deals with the chemical composition of the organic nitrogenous compounds fixed by bacteria. One of the primary aims is the development of a commercial fixation process similar to nature's apparently simple method, producing organic nitrogenous fertilizers at reduced costs. Much of the information is also of direct practical value. A better understanding of the conditions which favor nitrogen fixation by free living soil organisms and leguminous plants enables the farmer to increase his soil nitrogen supply at negligible costs.

Physics and chemical-fertilizer investigations. This project includes research to secure fundamental physical and chemical data which will throw light on the reactions occurring in nitrogen fixation and other fertilizer processes. X-ray, photochemical, infra-red, and electrical methods are being adapted with excellent results to problems having a bearing on fertilizer production; accurate data are being secured on the properties of gases and liquids and their mixtures under the wide range of temperature and pressure to which they must be subjected in the synthetic commercial processes; and reactions are being investigated at very high pressures to throw additional light on possible mechanism of nitrogen fixation.

Phosphate fertilizer investigations. These investigations relate to improvement of existing processes and the development of new methods for the more economical and efficient use of phosphate rock, particularly the low-grade and waste materials, in the production of fertilizers. Data are being accumulated on the chemical structures and properties of calcium, aluminum and iron phosphates that are of present and possible future importance in fertilizer technology; this information is of fundamental importance in the improvement of existing processes and the development of new ones. Studies are being made on the chemistry of superphosphates, in relation to the improvement of the manufacturing processes and to the production of granular, non-segregating, high-analysis fertilizers in one continuous operation. Special attention is being given to the production of available phosphate fertilizers by heating phosphate rock at high temperatures in the presence of water vapor; the product has many advantages over the types of phosphate fertilizers in common use.

Potash fertilizer investigations. This project relates to the technology of potash utilization and extraction, and has as its broader objective the development of diversified products and industries capable of supplying the farmer with low-cost potash as the product of a stabilized, chemical fertilizer industry. Due to the great size of agricultural America, the present distribution of potash from a few production centers and ports of entry represents costs that render potash use prohibitive in large areas and handicaps the domestic, in its competition with the imported, commodity. To this end, fundamental and applied chemical and engineering research is being conducted with a view to the fabrication of new potash products of increased plant food content, to lower the cost and widen the zone of distribution; the improvement in agronomic value of the product to increase economic returns to the farmer; and the wider utilization of potash raw materials, which the Nation possesses in abundance, in the establishment of new, decentralized industries, to supply areas now isolated with respect to low cost potash.

Concentrated fertilizer investigations. The work of this project relates to the investigation of methods for reducing fertilizer costs by improving the efficiency of fertilizers and increasing their plant food content. Concentrated fertilizers involve less handling, bagging, and storage space in the factory; less freight to the point of consumption; and less hauling, handling, and cost of application on the farm. Particular attention is being given at the present to the study of the reactions involved in the ammoniation of double superphosphate; preparation of nonacid-forming fertilizer mixtures; study of chemical reactions in fertilizer mixtures; granulation of mixed fertilizers; preparation of concentrated materials; development of formulas of concentrated mixtures of satisfactory quality; determination of free acid in superphosphates; loss of water-soluble potash in fertilizer mixtures; and statistical study of the use of filler in fertilizer mixtures. Investigations are also being made of the hygroscopicity and caking of fertilizers with a view of finding means for improving their drillability and other physical qualities.

(h) SOIL CHEMICAL AND PHYSICAL INVESTIGATIONS

Appropriation, 1932.	$ 61,420
Appropriation, 1933.	61,190
Appropriation, 1934.	56,545
Appropriation, 1935.	50,258 (a)
Budget Estimate, 1936.	68,081
Increase, Budget 1936, compared with Appropriation, 1935.	17,823 (b)

(a) Includes $2,379 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) $1,035 transferred from Bureau of Animal Industry; and (2) $1,344 from fund authorized by Sec. 21(e) of Act of March 28, 1934.

(b) Increase of $17,823 compared with 1935 appropriation consists of -

5% salary restoration, 1936 (to 100%)	+ $ 2,823
Increase in working funds for 1936	+ 15,150
Reduction: Offset of 1935 impoundment	- 150
	+ 17,823

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease: 5% Salary Restoration	Increase or decrease: Working Funds
Obligated:					
Soil chemical investigations.....	$34,270	$37,840	$55,220	$2,230	+$15,150(2)
Soil physical investigations.....	11,131	12,268	12,861	593	---
Total obligations.....	45,401	50,108	68,081	(1) 2,823	+15,150
Unobligated:					
Salary reduction impoundments.....	1,891	---	---	---	---
Other legislative impoundments.....	2,927	150	---	---	- 150(3)
Other amounts unobligated.....	6,326	---	---	---	---
Total appropriation.....	56,545	50,258	68,081	+ 17,823	

The increase of $17,823 for 1936 includes:

(1) An increase of $2,823 for 5% salary restoration, 1936 (to 100%).

(2) An increase of $15,150 for selenium land-poisoning investigations, consisting of $150 released from impoundment and made available for obligation in 1936 and $15,000 to replace funds provided under the Emergency Conservation Act in 1935. It has been demonstrated that the selenium content of vegetation is responsible for two distinct diseases in certain areas in this country, one an acute form causing immediate death and the other a chronic disease which causes permanent damage to the organisms and may produce death. The source of selenium has been traced to the soils. It is known that selenium affected areas exist in South Dakota, Nebraska, Kansas, Colorado, Wyoming, and Montana, and there are grounds for believing that areas also exist in Oklahoma, Texas, New Mexico, Arizona, Utah and Idaho. The affected areas in the aggregate probably cover several thousand square miles of arable land. In some of the areas the quantity present is not of menacing magnitude; in others it most decidedly is. Most of this land is used for raising wheat or livestock, and since the products of the soil are not directly consumed by the inhabitants, the major visible damage so far has been to animals rather than to people. The possibility exists of damage to persons consuming the toxic grain. The affected areas are interspersed with areas which are not toxic, so that at the present time definite assertion of unfitness of the soil for production of foodstuffs cannot be made without danger of injuring the reputation and value of land which may be free from deleterious quantities of selenium. Present emergency investigations are directed toward ascertaining the extent of the areas which are definitely toxic. The appropriation requested is to enable the Department to continue systematic investigations to delimit the areas affected and to study methods by which the condition can be corrected or controlled.

(3) A decrease of $150, offsetting 1935 impoundment. This decrease is merely an offset for a corresponding increase estimated for obligation in 1936. (See note 2).

WORK DONE UNDER THIS APPROPRIATION

General. Work under this appropriation includes studies of those chemical and physical properties of soils which determine their degree of resistance to the erosive action of rain wash; the determination of the quantity and quality of both the inorganic and organic constituents of the great soil groups; and a study of the effect of these fine particles upon the response of the different soil types to fertilizer treatments. These researches provide the basic information necessary for the evaluation of the different soil groups in terms of their potential productivity and thus lay the foundation for the classification of soils on which to develop a sound land use policy. In addition to these researches, the work includes all of the analyses for the Soil Survey and a large number of routine examinations and tests of soils and soil materials for other governmental agencies, the results of which are necessary for the conduct of their work. No other agency is in position to carry out these researches which require sustained study over a period of years, or to perform the routine services with which this division is charged. The development of new and improved methods and more efficient equipment during the past few years has resulted in economies of operation that have made it possible to meet the increasing demand for service. The work includes:

Soil chemistry. The work under this project includes chemical analyses of soils for other divisions of the Bureau and for other Government agencies and fundamental chemical research on problems relating to the soil. The research is at present largely centered on soil colloids now known to be the active components of the soil. A thorough knowledge of the nature and variations of soil colloids is essential to satisfactory classification for either land utilization or land conservation. Research is also conducted on chemical properties of peat with a direct bearing on the utilization of 110,000,000 acres of domestic peat. Other investigations are on the chemical characteristics of major soil series; on the chemical constitution of soil colloids in relation to their climatic development; on the causes of toxicity of certain soils; and on the relation of chemical composition to the infertility of certain widely distributed soils.

Soil physics. The work under this project includes investigations on the effects of soil texture, moisture, temperature, and atmosphere on the physical characteristics of soil for the purpose of increasing soil productivity and developing improved methods of soil management; studies of the physical properties of soils involved in the differentiation of soil types; development of field and laboratory methods and apparatus for determining the physical properties of soils; and routine physical examinations of soils as the demands of research within the Bureau and in other Government agencies require. An important portion of the work is on the relation of soil structure and texture to the erosive behavior of soils and on the distribution of water within soil profiles.

EMERGENCY FUNDS

Direct Allotment

Projects	Obligated, 1934	Estimated obligations, 1935
Emergency Conservative Work (Authorized by Act of March 31, 1933; allotment from War Department):		
Investigations of soils and related materials for selenium content	$16,722	$18,278

(i) SOIL SURVEY

Appropriation, 1932.	$ 321,705	
Appropriation, 1933.	307,705	
Appropriation, 1934.	275,000	
Appropriation, 1935.	200,391	(a)
Budget Estimate, 1936.	286,208	
Increase, Budget 1936, compared with Appropriation, 1935.	85,817	(b)

(a) Includes $8,000 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) $3,480 transferred from Bureau of Animal Industry; and (2) $4,520 from fund authorized by Sec. 21(e) of Act of March 28, 1934.

(b) Increase of $85,817 compared with 1935 appropriation consists of -

5% salary restoration, 1936 (to 100%).	+	$10,817
Increase in working funds for 1936	+	75,500
Reduction: Offset of 1935 impoundment.	-	500
	+	85,817

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease: 5% Salary Restoration	Increase or decrease: Working Funds
Obligated:					
Detailed and reconnaissance surveys....	$173,964	$146,727	$215,670	$7,693	+$61,250
Inspection and correlation.....	28,926	25,336	32,788	1,452	+ 6,000
Map drafting.....	30,703	27,828	37,750	1,672	+ 8,250
Total obligations.....	233,592	199,891	286,208	(1)10,817	+ 75,500(2
Unobligated:					
Salary reduction impoundments.....	8,578	---	---	---	---
Other legislative impoundments.....	4,019	500	---	---	- 500(3
Other amounts unobligated.....	28,810	---	---	---	---
Total appropriation....	275,000	200,391	286,208	+ 85,817	

The increase of $85,817 for 1936 includes:

(1) An increase of $10,817 for 5% salary restoration, 1936 (to 100%).

(2) An increase of $75,500 for cooperative soil survey work, consisting of $500 released from impoundment and made available for obligation in 1936, and an actual increase of $75,000. Interest in the Soil Survey and the demand for soil survey maps and reports has reached a point never before attained.

There is an increasing demand for surveys from a large number of States and local governments as well as in connection with the work of the Federal Departments. The present reduced appropriation makes it impossible to meet these demands. The cooperative obligations of the Soil Survey to the States have had to be seriously curtailed, and this has already resulted in vigorous protests from New York, Pennsylvania, Rhode Island, Ohio, Indiana, Iowa, North Carolina, Alabama, Texas, Nebraska, Virginia and other States in which the reduction of the normal cooperation of the Soil Survey is handicapping the States in their efforts to adjust their agriculture to meet present conditions. Local and State Governments, as well as the National Government, are striving to formulate policies looking to better utilization of their land and to stabilization of their economic conditions. The data of the Soil Survey furnish the only fundamentally sound basis for the development of a land policy which will serve as a guide in working out crop adjustments and other social and economic programs. It is imperative that the Soil Survey be in a position to furnish its service to the States and other agencies. The increased appropriation requested will enable the expansion and speeding up of the soil survey work in those areas where the immediate problems of land-use are most pressing.

(3) A decrease of $500, offsetting 1935 impoundment. This decrease is merely an offset for a corresponding increase estimated for obligation in 1936. (See note 2).

WORK DONE UNDER THIS APPROPRIATION

General. The object of the Soil Survey is to classify and map soils of the United States; and to describe their characteristics, particularly in reference to the growth of various crops, grasses, and trees. The ultimate purpose is to provide accurate soil maps of the country necessary for the classification of rural lands and for the factual basis in the development of any rational program of land use. The work comprises the determination of the character of soils, the definition of soil types, development of a system of classification, delineation upon maps of the boundaries of each type, the correlation of the various soil types in the country, and the interpretation of their relationship to the production of crops, grasses, and trees. This information is made available in published form to those interested in all phases of agriculture and other problems of land use. State cooperating agencies and other responsible people are furnished advanced photographic copies of the field work for their immediate use where needed at once. Essentially all of the work is accomplished in cooperation with the various States and is necessary to them for the development of programs for the readjustment of their agriculture on a sound basis. Especially during the latter part of the fiscal year special reports and surveys were made for various other Governmental agencies which have need for physical data regarding land in order to develop the programs which are under their responsibility. A great deal of information is made available to the public through correspondence in answer to specific inquiries regarding the location of soils and the specific fitness of soils for various purposes.

Detailed and reconnaissance surveys. Detailed soil surveys are made of small units, usually a county, and the soil types are differentiated and their location and extent shown on maps on a scale of one inch to the mile; reconnaissance surveys cover larger areas in which the soils are differentiated into broader, more extensive units. During the past fiscal year soil survey

work was carried on in 70 areas scattered over 27 States; 21,318 square miles were covered by detailed surveys, and 1,145 square miles by the reconnaissance method. The soil survey work is cooperative with the various States, and in most States is conducted on a basis which calls for equal expenditures by the Federal Government and the State for field work.

Inspection and correlation. This project includes inspection and supervision of the soil survey work in progress and correlation of the soil types to insure uniform classification over the entire country. For purpose of inspection and correlation the country is divided into districts, each with an inspector, whose work covers the scientific and technical supervision of the soil survey work in his district, identification of soil units, and maintenance of uniform classification. The inspectors also devote some time to the investigation of special soil problems for other Government agencies and the giving of advice on the selection of land for various public enterprises.

Map drafting. This work consists of the construction of soil maps, charts, and graphs for engraving and photolithographic reproduction which accompany the printed soil survey reports. The maps are constructed from the original field survey sheets and other available map data, and the work involves the computation and construction of projections for surveys and drawings, plotting geodetic positions, making mathematical adjustments, and compiling, revising, and correcting maps, charts, and graphs for direct reproduction, requiring intricate knowledge of details and expert workmanship.

EMERGENCY FUNDS

Direct Allotments

Projects	Obligated, 1934	Estimated obligations, 1935
Relief in Stricken Agricultural Areas		
Soil studies in connection with locating proposed tree shelter belt..... (Transferred from Forest Service)	---	$6,000
Civil Works (Allotment for transportation of field parties in making plane-table surveys).....	$24,676	---
Total, direct allotments, as above.....	24,676	6,000

(j) SOIL MICROBIOLOGY INVESTIGATIONS

(k) SOIL FERTILITY INVESTIGATIONS

These two items have been transferred to and are shown under the Bureau of Plant Industry in the estimates for 1936.

PASSENGER-CARRYING VEHICLES

The authorization for purchase of passenger-carrying vehicles contemplates an increase of $1,180 ($590 in 1935; $1,770 estimated for 1936) for this purpose. As shown by the Budget schedule, the $1,770 authorization would permit replacement of 3 vehicles at an average net cost of $590 each, when exchange allowances are taken into account.

The replacements are needed in order to obviate the continued use of worn-out cars at excessive maintenance costs. Two of the automobiles now in use will have been in service four years and another one five years at that time.

These automobiles are needed for inspection and supervision of soil-survey field work.

EMERGENCY FUNDS - BUREAU TOTAL

Summary

Projects	Obligated, 1934	Estimate obligation, 1935
Agricultural Adjustment Administration (transfer)	$ 1,517	$ 915
Public Works allotments (Physical improvements)	68,133 (a)	34,858
Civil Works projects	24,676	---
Emergency Conservation work (Selenium investigations)	16,722	18,278
Relief in stricken agriculture areas	---	6,000
Total	111,048	60,051

(a) Exclusive of $928 for physical improvements under "Soil Fertility", proposed to be transferred to the Bureau of Plant Industry in 1936 estimates.

BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

General Statement

The arrangement of the estimates for the fiscal year 1936 follows the same general plan as those for the fiscal year 1935. The Act making appropriations for the fiscal year 1935 effected certain reorganization of activities dealing with investigations on insects and the control of plant pests. This reorganization brought together work heretofore carried on in the Bureau of Entomology, the Bureau of Plant Quarantine and certain work on control of plant pests formerly carried on by the Bureau of Plant Industry.

For comparative purposes, the tabulation of the funds available to various items includes the amount available for the work without specific reference to the fact that the amount available for the fiscal year 1934 was appropriated to the Bureaus and units of which the present Bureau of Entomology and Plant Quarantine is composed. Reorganization of activities authorized by the appropriation Act for 1935 has lead to a more efficient and effective operation.

On September 1, 1934, the Secretary of Agriculture transferred to the Bureau of Entomology and Plant Quarantine the administrative supervision of the work on the chemistry of insecticides heretofore included in the Bureau of Chemistry and Soils. This change was made in the interest of efficiency and effective operation and places under one Bureau the work on the development of insecticides, including the chemical phases of such work. The estimates for 1936 are submitted on this basis.

The estimates submitted for 1936 provide appropriations for certain activities--white pine blister rust, barberry eradication and gypsy moth control, which were omitted from the Act making appropriations to the Department for the fiscal year 1935 since during this year they were financed from special allotments by the Public Works Administration.

These various changes are fully discussed in the notes which follow.

(a) GENERAL ADMINISTRATIVE EXPENSES

Appropriation, 1932	$ 222,000	
Appropriation, 1933	222,868	
Appropriation, 1934	206,454	(a)
Appropriation, 1935	156,581	(b)
Budget Estimate, 1936	162,288	
Increase, Budget 1936, compared with Appropriation, 1935	5,707	(c)

(a) Excluding $11,100 transferred to "Control Investigations".

(b) Includes $7,472 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) $3,336 transferred from Bureau of Animal Industry; and (2) $4,136 from fund authorized by Sec. 21(e) of Act of March 28, 1934.

(c) Increase of $5,707 compared with 1935 appropriation consists of:

5% salary restoration, 1936 (to 100%)....	+$7,472
Decrease in working funds for 1936 (transfer to Interior Dept.).....	- 1,685
Reduction: Continuation of 1935 vacancy impoundments.....	- 80
	+ $5,707

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease 5% Salary Restoration	Increase or decrease Working Funds
Obligated:					
General administration	$163,972	$156,501	162,288	$7,472(1)	-$1,685(2)
Unobligated:					
Salary reduction impoundments.....	9,644	---	---	----	---
Other legislative impoundments.....	8,447	80	---	----	-80(3)
Other amounts unobligated.....	24,391	---	---	----	---
Total appropriation.....	206,454	156,581	162,288	+ 5,707	

The increase of $5,707 for 1936 includes:

(1) An increase of $7,472 for 5% salary restoration, 1936 to (100%).

(2) A decrease of $1,685 by transfer to Interior Department for cleaning service.

(3) A reduction of $80, continuing 1935 impoundment.

WORK DONE UNDER THIS APPROPRIATION

This appropriation provides for the following functions all of which are essential to the effective and economical administration of the Bureau:

a. Determination of policies;

b. general administrative supervision of all Departmental and field activities;

c. business operations;

d. approval and preparation for publication of manuscripts dealing with work of the Bureau;

e. preparation and distribution of general information, including reports and publications;

f. maintenance of a comprehensive library of literature on entomology and preparation of bibliographies on special subjects.

g. handling of general information relating to Federal quarantine and the preparation of cases on quarantine violations.

EMERGENCY FUNDS

Direct Allotments

Projects	Obligated, 1934	Estimated obligations, 1935
Public Works allotments (National Industrial Recovery Act):		
Construction of laboratory, greenhouses, and mushroom plant at Beltsville, Md.....	$1,745	$133,255

(b) FRUIT INSECTS

Appropriation, 1932	$540,939
Appropriation, 1933	456,152
Appropriation, 1934	425,500 (a)
Appropriation, 1935	335,145 (b)
Budget Estimate, 1936	399,531
Increase, Budget 1936, compared with Appropriation, 1935	64,386 (c)

(a) Includes $55,000 reappropriated from 1931 appropriation, and $14,300 transferred from "Household and Stored Products Insects"; and excludes $9,800 transferred to "Forest and Shade Tree Insects."

(b) Includes $14,386 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) $6,360 transferred from Bureau of Animal Industry; and (2) $8,026 from fund authorized by Sec. 21(e) of Act of March 28, 1934.

(c) Increase of $64,386 compared with 1935 appropriation consists of:

5% salary restoration, 1936 (to 100%).....	+ $14,386
Increase in working funds for 1936.....	+ 50,240
Reduction: Offset of 1935 vacancy impoundments	- 240
	+ $64,386

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or Decrease: 5% Salary Restoration	Increase or Decrease: Working Funds
Obligated:					
Apple Insects.....	$43,129	$47,700	$94,670	$1,730	+$45,240 (2)
Peach Insects.....	38,697	40,450	41,800	1,350	---
Grape Insects.....	5,045	5,780	10,995	215	+ 5,000 (3)
Nut Insects.....	17,146	19,840	20,500	660	---
Dried Fruit Insects....	14,215	15,320	16,002	682	---
Subtropical Fruit Insects.....	35,158	39,525	41,020	1,495	---
Fruit Flies.....	51,424	54,203	56,411	2,208	---
Insecticidal Value of Oils.....	4,232	4,960	5,120	160	----
Japanese and Asiatic Beetles.....	115,418	107,127	113,013	5,886	
Total obligations.....	324,464	334,905	399,531	14,386(1)	+ 50,240
Unobligated:					
Salary reduction impoundments.....	17,286	---	---	---	---
Other legislative impoundments.....	19,382	240	---	---	- 240(4)
Other amounts unobligated.....	63,868	---	---	---	---
Total appropriation.....	425,500	335,145	399,531	+64,386	

The increase of $64,386 for 1936 includes:

(1) An increase of $14,386 for 5% salary restoration, 1936 (to 100%).

(2) An increase of $45,240 in the project "Apple Insects." This increase is urgently needed to continue certain phases of investigations on codling moth which have been carried on during the crop season 1934 with a special allotment of $97,215 from the Public Works Administration. The codling moth is the most important pest of apples and no effective method of control is available. The most effective controls require the use of insecticides which leave objectionable residues. It is important that new

controls be developed which will enable the fruit grower to produce fruit free from insect infestation and without residues in excess of the standard required in the interest of public health. During the season of 1934, large scale field tests were conducted to determine the effectiveness of materials which do not leave objectionable residues. These and laboratory tests have developed very valuable information. They clearly indicate that certain materials are not effective but that certain substitutes show promise. Further small scale field tests and additional laboratory work are essential.

(3) An increase of $5,000 in the project "Grape Insects." This increase is urged to provide for continuing certain phases of the investigations conducted during the season 1934 with a $6,000 allotment from the Public Works Administration. The present methods of control of the grape-berry moth require the use of insecticides containing arsenic, the residues of which are objectionable from the standpoint of public health and this interferes with the larger use of these grapes in wine making. No method of handling and treating grapes to remove objectionable residues is known. During the crop season 1934, special studies were conducted to develop control of the grapeberry moth by use of cultural methods of insecticides not containing objectionable materials. Promising results have been secured from these preliminary studies but definite recommendations cannot be made on results secured during one season.

(4) A reduction of $240, continuing 1935 impoundment.

WORK DONE UNDER THIS APPROPRIATION

General. This item provides for investigations to develop control measures for insects affecting fruit, fruit trees, nuts, grapes and those small fruits which have seeds internally, such as blueberries and cranberries. Investigations on Japanese and Asiatic beetles and fruit flies are also carried on under this item.

Apple Insects. Investigations on insects attacking apples are practically restricted to development of more effective measures of controlling the codling moth. The only control which can now be recommended for the codling moth leaves objectionable insecticidal residues on harvested fruit, the presence of which has created a critical situation from the standpoint of apple producers in all regions. Although the residues from the standard insecticide-- arsenate of lead-- can be largely removed by washing fruit in dilute hydrochloric acid or other solvents, this operation is costly and cannot be economically applied throughout the country. The funds provided by regular appropriations were, during the season 1934, augmented by an allotment of $97,215 from the Public Works Administration. Additional information secured as the result of this enlarged allotment is of material benefit. The promising new materials will be further tested as to effectiveness for codling moth control and to determine how they will fit into spray schedules

which include fungicides used for the control of diseases. These activities are carried on in cooperation with many agencies and the investigations conducted by all--including work done by state and private agencies--are coordinated through the leadership of the Bureau of Entomology and Plant Quarantine. Field laboratories are maintained in important apple-producing regions.

Peach Insects. The work on insects attacking peaches is directed largely toward the development of controls for the Oriental fruit moth, plum curculio and peach tree borer. In the absence of effective insecticidal control for the Oriental fruit moth, emphasis is being placed on the use of natural enemies, both native and those introduced from foreign countries. In some limited sections parasites have become sufficiently established to bring about appreciable control. Certain investigations on the possibility of utilizing baits in the control of the Oriental fruit moth are also under way. In sections where two broods of the plum curculio occur, it is necessary to develop methods of control which will prevent objectionable residues remaining on the fruit after harvested. No method for the removal of such residues is now available. Studies are also being made on the peach tree borer to determine its relationship to the transmission of the phony peach disease and to develop effective means of disinfecting nursery stock so as to eliminate infestations of the borer and thus reduce the danger of spreading this disease. Field laboratories are located in New Jersey and Georgia.

Grape Insects. The work on grape insects in confined to the northeastern section, with headquarters in Ohio, and directed largely toward the development of controls of the grapeberry moth. Special attention is directed toward the practicability of modifying cultural practices so as to keep down heavy infestations and to reduce the number of spray applications necessary. Tests are also being made with insecticides which do not leave spray residues. Radical changes in the sprays or spray schedules may make it possible for certain other pests, such as the grape root-worm and the rose chafer, to increase in such numbers so as to become intensively injurious. Heretofore the sprays applied for the grapeberry moth have served to keep these pests in check. In any new control program, these pests must be considered along with the more important grapeberry moth.

Nut Insects. Work on nut insects is restricted to development of methods of controlling insect pests of pecan as this rapidly developing industry is confronted with many unsolved problems in pest control. Special attention is now being given to the pecan phylloxera, pecan aphid, pecan tree borer, the nut case bearer and shuckworm, for which effective controls are not available. These studies are carried on at field laboratories in Albany, Georgia, Brownwood, Texas, and Shreveport, Louisiana.

Dried Fruit Insects. This activity is concerned with insects attacking dried fruits and the determination of methods for their control. Many of the pests of dried fruits infest the fruit, both in

the orchard as well as when it is being dried and stored. Studies under way are directed toward the development of measures by which the grower and packer may correct conditions favorable to the infestation of such fruits as figs, peaches, apricots and raisins in orchards, drying yards, etc. to develop ways of eliminating infestations by fumigation in storage and to perfect light and bait traps which will reduce the number of pests. The activities are headquartered in California and carried on cooperatively with state and local agencies.

Subtropical Fruit Insects. This activity is concerned with the development of methods of controlling certain insect pests of citrus and is carried on at laboratories in Florida and California. In Florida particular attention is directed to the development of methods of increasing the adhesiveness of sulphur, the standard insecticide for the control of rust mites and certain scale insects, and to develop exact information which will permit more accurate timing of the control measures. Such information is necessary to secure effective control and reduce the number of applications and prevent inefficient operation and waste of materials. In California attention is directed largely to controlling the red scale, an insect which seems to be resistant to the standard methods of control by fumigation. These investigations are carried on in cooperation with appropriate state agencies.

Fruit Flies. This activity is concerned with investigations to develop new and needed facts regarding habits and hosts of certain important fruit flies and to develop methods of control which will aid in preventing them from entering into the United States or eliminate them in event they should become established in isolated areas. These studies are of great importance as a protection of the horticulture of the United States. They are headquartered at Honolulu. T. H., Mexico City, Mexico, Balboa, Canal Zone, Mayaguez, P. R. Work at these several laboratories is coordinated and special attention is now being directed toward the development of effective attractants that may be used in traps to detect the presence of flies; to develop bait sprays to eliminate adults; to determine effective methods of sterilizing fruit that may be subject to infestations; and to developing methods of disposal of waste products or culled fruit. The work at Mexico City is designed to intimately support the campaign carried on in the Lower Rio Grande Valley against Mexican and related fruit flies. The activities in Puerto Rico develop facts needed in the work carried on in Key West to eradicate an incipient infestation of West Indian fruit fly. This latter activity is conducted in cooperation with the State Plant Board of Florida under special allotment from the Public Works Administration.

Insecticidal Value of Oils. Various oils have been found to be effective in the control of many of the insect pests attacking deciduous fruit trees. The effectiveness of oils varies greatly, depending on their composition. Basic information is urgently needed to determine the practicability of using various types of highly refined oils either alone or in combination with other materials. These studies are carried on at Wooster, Ohio, in cooperation with the Ohio Agricultural Experiment Station. Particular attention is now directed toward the development of

oil sprays which may be used during the dormant period to kill certain injurious insects which hibernate either as eggs or as, in the case of the codling moth, in the cocoon stage.

Japanese and Asiatic Beetles. The gradual spread of the introduced Japanese and Asiatic beetles into new regions emphasizes the need of testing recommended methods of control in sections recently infested and in developing more effective methods of control and ways of eliminating outlying infestations. The studies on these pests are headquartered at the laboratory at Moorestown, New Jersey. Among the problems on which special emphasis is now being placed are: The development of repellents to protect various plants and fruits severely injured by the feeding of the adult beetle; investigations to determine a more effective way of trapping the beetles to detect their presence where infestation is light and reduce their abundance in heavily infested regions; studies to determine ways of disinfecting various types of plants and plant products, particularly those produced in newly infested areas; investigations designed to develop a new soil insecticide which may be used to kill grubs in soils which may be injured by arsenate of lead, the standard method which is effectively and safely used in the present infested area. Attention is also directed toward the colonization of established parasites and the importation of other species which may aid in control.

EMERGENCY FUNDS

Direct Allotments

Projects	Obligated, 1934	Estimated obligations, 1935
Public Works Allotments (National Industrial Recovery Act):		
Construction and repairing of greenhouse, storage sheds, insectaries at Morestown, New Jersey for use in connection with investigations on the Japanese Beetle	$14,082	---
Construction of temporary insectary at Albany, Georgia, to be used in connection with investigations on pecan insects	348	---
(a) Eradication of West Indian Fruit Fly	~~18~~ 13,600	$22,400
Spray Residue investigations	42,000	61,215
Total	~~75~~ 70,030	83,615

(a) Shown in Budget schedules following Mexican Fruit Fly Control.

Appropriation, 1932	$ 445,000
Appropriation, 1933	350,000
Appropriation, 1934	349,837
Appropriation, 1935	239,562 (a)
Budget Estimate, 1936	350,000
Increase, Budget 1936, compared with Appropriation, 1935	110,438 (b)

(a) Includes $9,562 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) $4,711 transferred from Bureau of Animal Industry; and (2) $4,851 from fund authorized by Sec. 21(e) of Act of March 28, 1934.

(b) Increase of $110,438 compared with 1935 appropriation consists of:

5% salary restoration, 1936 (to 100%)	+ $9,562
Increase in working funds for 1936	+101,036
Reduction: Offset of 1935 impoundments	- 160
	+110,438

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase of Decrease 5% Salary Restoration	Working Funds
Obligated:					
Supervision of nurseries and greenhouses	$176,616	$150,378	$176,378	$6,000	+$20,000
Nursery and greenhouse scouting	11,712	11,719	20,719	500	+ 8,500
Trapping	43,604	46,484	86,082	1,860	+ 37,738
Trapping control	4,880	---	15,000	---	+ 15,000
Quarantine enforcement vehicle inspection	22,814	25,264	26,264	1,000	---
Quarantine enforcement, farm products inspection	15,616	5,557	25,557	202	+ 19,798
Soil Treatment	8,101	---	---	---	---
Total obligations	283,343	239,402	350,000	9,562(1)	+101,036
Unobligated:					
Salary reduction impoundments	12,977	---	---	---	---
Other legislative impoundments	6,284	160	---	---	- 160
Other amounts unobligated	47,233	---	---	---	---
Total appropriation	349,837	239,562	350,000	+ 110,438	

The increase of $110,438 for 1936 includes:

(1) An increase of $9,562 for 5% salary restoration, 1936, (to 100%).

Increases (items 2-6) aggregating $101,036 for scouting and trapping operations to determine the distribution of Japanese beetle, and inspection and certification of products to meet the requirements of the Federal quarantine, as follows:

(2) An increase of $20,000 in the project "Supervision of Nurseries and Greenhouses." This increase is necessary to provide additional inspection and certification to enable nursery and greenhouse owners to ship their products out of the quarantined area. Increasing intensity of the Japanese beetle population in points which have been lightly infested for a number of years leads to a constant increase in the number of establishments from which products are shipped subject to maximum restrictions to prevent infestation accompanying the shipments. The present inspection force is inadequate to provide supervision of these establishments, resulting in delays in inspection and certification, which leads to loss of sales and business on the part of producers in the regulated area. If the work is speeded up without increasing personnel, it will become superficial and the result will be loss of confidence of State quarantine officials in the Federal certificates which will likewise result in loss of business.

(3) An increase of $8,500 in the project "Nursery and Greenhouse Scouting." This increase is necessary to provide additional scouting to determine the presence or absence of the Japanese beetle in nursery and greenhouse premises. This information is essential to the proper classification of such establishments in the area under quarantine. The Japanese beetle population is increasing in intensity at points where the infestation has been present in a light form and this changing condition is bringing an increase in the number of these establishments classified as infested. Correct classification of these properties is based on careful inspection which determines the presence or absence of the Japanese beetle in the nursery or greenhouse. If such property remains in the beetle-free class, it is permitted to engage in interstate business without the restraints placed by the quarantine on properties classified as infested. The care with which this work is conducted decides, therefore, the status of the establishment and protects the integrity of the Federal certificate. With the increase in the number of establishments to be classified, the work cannot be done with the force available under the present appropriation.

(4) An increase of $37,738 in the project "Trapping." This increase is needed to carry on a trapping program adequate to indicate the presence or absence of the Japanese beetle in areas outside the known infested area. Obviously, a quarantine cannot long be operated effectively without accurate knowledge of the distribution of the pest concerned. Due to the curtailment of this project in the summer of 1933 an infestation in St. Louis remained undetected with the result that when it was discovered in 1934, the control work was much more difficult and expensive than would have been the

case a year earlier. This is typical of the danger of curtailing the trapping program to the extent which will be necessary with the funds now available.

(5) An increase of $15,000 in the project, "Trapping Control." No regular funds were provided for this project in the fiscal year 1935. Trapping control is a part of the program conducted during the past season in the St. Louis area under a $65,000 allotment from the funds for emergency relief in stricken agricultural areas. The increase for 1936 is required to continue a trapping control program in St. Louis and other areas such as Indianapolis, Indiana, and Charlottesville, Virginia, where infestations affecting territory hitherto uninfested may be held in check and quarantine action delayed if control measures can be adequately applied.

(6) An increase of $19,798 for the project, "Quarantine Enforcement, Farm Products Inspection." This increase is necessary to provide additional facilities for the inspection and certification of truck crops and similar farm products produced within the infested area for shipment to favorable markets in the uninfested area. The increasing beetle population at points which have been considered as lightly infested has brought large producing areas under the more strict regulations applying to more heavily infested regions with the result that a greater proportion of the products produced and shipped under heavily infested conditions have been forced to find a market outside. The inspection of these products covers, therefore, a greatly increased volume and at many additional loading points. Furthermore, beetle flight conditions at some of these loading points are such that precautions have to be taken to prevent beetles from entering loading freight cars. Any delay in the inspection and certification of farm products owing to their perishable nature will seriously disrupt the marketing program which is being developed and cause heavy losses to the producers.

(7) A reduction of $160, offsetting 1935 impoundment.

WORK DONE UNDER THIS APPROPRIATION

General. The work carried on under this item is concerned with the protection of fruit, vegetable and ornamental growing areas of the United States from the danger of infestation by the Japanese beetle.

This insect was imported into the United States, being first discovered in New Jersey in 1916. It is believed to have been there several years prior to that time. It is carried in various kinds of farm products and particularly by nursery stock which is moved with soil about the roots. It attacks many different kinds of fruits, berries, and feeds rather generally on garden and truck crops. In the heavily infested areas during the flight season, it is often so

abundant as to fly to loaded produce enroute to concentration points or markets so that such articles may become infested while in transit. Precautions have to be taken and maintained to prevent infestation while products are in the heavily infested area.

Supervision of Nursery and Greenhouses. Provides for the work necessary in connection with the certification of nursery products for movement to areas outside the quarantined area. According to the last census, there were in the quarantined area 1,654 nurseries, containing more than 69,000 acres, having a land value of more than $30,000,000. In the last five years, 252,637,389 nursery plants, many of which had roots in soil, and 46,577 car lots of sand, potting soil and its constituents were certified for shipment. Destination of this material includes every State and the District of Columbia. The safeguards employed under Federal supervision which serve as a basis for certification, form the sole protection against the distribution of the Japanese beetle with these materials.

Nursery and Greenhouse Scouting. The classification of nurseries and greenhouses in the quarantined area is based on the determination by Federal inspection as to the presence or absence of the Japanese beetle in the individual premises. Use of traps for such purposes would be likely to attract beetles from adjoining properties, and hence traps are not used in nurseries. This work must be done with great care, since no infested nursery should be left in the beetle-free class. Careful inspection and strict supervision are the only safeguards, and inspection of all the nurseries in the area must be made each year to determine changes in classification which may be necessary.

Trapping. The use of traps in scouting to determine the presence or absence of the Japanese beetle in areas not known to be infested has proven to be the most efficient form of accomplishing this work. The traps are set up in a community which is to be scouted and so arranged that they can be tended with a minimum of time and effort and at the same time, secure as large a coverage of the area selected as is practicable. Each trap is identified and any beetles taken in the traps are preserved and forwarded to the field headquarters of the project with a proper notation attached so that the location of the finding is recorded. By the use of traps infestations are found in the area not known to be infested and it was due to the effectiveness of traps that infestations were found during the past season in points such as Indianapolis, Indiana, where seventeen beetles were trapped, and Charlottesville, Virginia, where sixty beetles were taken. The use of traps in St. Louis, Missouri resulted in the capture of more than 1,300 beetles, which indicates that had funds been available to do trapping work at that point in 1933, the presence of the infestation there would have been determined at least a year sooner than it was.

Trapping Control. Owing to the fact that the Japanese beetle spends nine months of the year under ground, it is a very difficult insect to control or exterminate. The nearest approach to extermination

of isolated infestations yet devised consists in poisoning the soil where beetles are found and the use of traps over the poisoned soil in order to attract any beetles which might be present so that any escaping the traps may be induced to deposit their eggs in the poisoned soil. Trapping control is used at points where outlying infestations of the Japanese beetle have been found and where it is desirable to delay the building up of the beetle population with the consequent forming of a new center of spread for as long a period as possible. Control trapping requires a concentration of traps whereas trapping for scouting purposes requires their use over a much larger area. Control trapping will be carried on in communities, such as St. Louis, Missouri, Indianapolis, Indiana, Charlottesville, Virginia, and Erie, Pennsylvania where the soil has been poisoned and where it is believed that the building up of beetle population can be delayed if these measures can be carried on.

Quarantine Enforcement, Vehicular Inspection. Every effort to reduce the expenditures for vehicle inspection has been made. With the territory gradually increasing, and consequently more traffic to be handled, the inspections have been made to bear as lightly as possible on this traffic. Motor cars going from within the area to points outside are halted merely for ascertaining as to whether they have plants or fruit products purchased within the area. Trucks are subjected to more careful examination. This work has been reduced to the absolute minimum consistent with the purpose of restricting the possible movement of commodities likely to carry the Japanese beetle. Vehicle inspection cannot be abandoned, because it discourages the shipment of nursery stock and farm products by truck to avoid the inspection and certification requirements which can be enforced for rail shipments.

Quarantine Enforcement, Farm Products Inspection. During the last five years 30,103,785 packages of fruits and vegetables were certified for shipment. These materials are are destined to every State, and they include many products especially attractive to the beetle, such as apples, peaches, berries and beans. Actual inspection is made of these products, certification being refused if infestation is found. In the case of some products where infestation is very likely to occur and where a known and feasible method of treatment is available, supervision of treatment is substituted for the actual inspection. For example, green beans are run through a mechanical device which shakes off the beetles, and berries which cannot stand handling are fumigated. These products are not allowed to move outside the quarantined area without certification. No reduction in this appropriation can be made, since the movement of these commodities has not diminished in volume, and in fact of recent years, due to market conditions, there has been perhaps even greater distribution of certain commodities produced within the quarantined area.

EMERGENCY FUNDS

Direct Allotments

Projects	Obligated, 1934	Estimated obligations, 1935
Public Works Allotments (National Industrial Recovery Act):		
Repair roof on warehouse of Japanese beetle project at New Cumberland, near Harrisburg, Pa.	$7,274	---
Resurfacing road from property line of U.S. Army reservation to Japanese beetle warehouse at New Cumberland, near Harrisburg, Pa.	2,488	---
Reconstruct concrete loading platform at warehouse of Japanese beetle project at New Cumberland, near Harrisburg, Pa.	1,885	---
Reconstruct large service door of warehouse of Japanese beetle project at New Cumberland, near Harrisburg, Pa.	122	---
Total	11,769	
Loans and Relief in Stricken Agricultural Areas		
Control of infestation of the Japanese Beetle at St. Louis, Mo.	---	$65,000

(d) MEXICAN FRUIT FLY CONTROL

Appropriation, 1932	$124,960	
Appropriation, 1933	122,080	
Appropriation, 1934	114,197	
Appropriation, 1935	106,056	(a)
Budget Estimate, 1936	140,460	
Increase, Budget 1936, compared with Appropriation, 1935	34,404	(b)

(a) Includes $4,404 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) $2,031 transferred from Bureau of Animal Industry; and (2) $2,373 from fund authorized by Sec. 21(e) of Act of March 28, 1934.

(b) Increase of $34,404 compared with 1935 appropriation consists of:

5% salary restoration, 1936 (to 100%).....	+ $4,404
Increase in working funds for 1936.....	+ 30,080
Reduction: Offset of 1935 vacancy impoundments.	- 80
	+ 34,404

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or Decrease 5% Salary Restoration	Increase or Decrease Working Funds
Obligated:					
Grove and packing house inspection and certification.	$86,683	$94,976	$128,460	$3,404	+30,080(2)
Spray and control in Mexico.....	2,675	2,800	3,000	200	---
Spray and control in Texas.....	4,600	4,600	5,000	400	---
Road Stations.....	3,600	3,600	4,000	400	---
Total, obligations.	97,558	105,976	140,460	4,404(1)	+30,080
Unobligated:					
Salary reduction impoundments....	4,116	---	---	---	---
Other legislative impoundments....	911	80	---	---	- 80(3)
Other amounts unobligated.....	11,612	---	---	---	---
Total appropriation.	114,197	106,056	140,460	+ 34,404	

The increase of $34,404 for 1936 includes:

(1) An increase of $4,404 for 5% salary restoration, 1936 (to 100%).

(2) An increase of $30,080 in the project "Grove and Packing House Inspection and Certification." This increase is needed for the employment of additional inspectors to enforce sanitary requirements on which certification of citrus fruit produced in the Rio Grande Valley is based. There are more than 8,000,000 citrus trees set out in grove formation in the Rio Grande Valley and of this number more than 5,000,000 have already reached bearing age. Inspection of these groves during the season is necessary every thirty days to enforce the sanitary requirements on which certification of the fruit is based. With the number of men now employed, it has become impossible to properly inspect the acreage as frequently as necessary. The States outside the infested area susceptible to infestation depend on the Federal quarantine

to prevent the movement of commodities which might be capable of carrying the Mexican fruit fly to fruit-growing sections outside of the infested area. If infestations can be found before they build up to serious proportions eradication efforts are much less expensive and result in the destruction of less fruit for the growers. If infestations are not found promptly there is danger of certifying infested fruit. Because of volume and difficulty of detecting fruit fly stings in their early stages it is impossible to inspect the fruit and hence the only safeguards are those requiring proper sanitation such as picking up and destroying fallen fruit, enforcement of the non-host fruit period and strict supervision of packing-house methods in order that Federal certificates may accompany only fruit which is reasonably certain of being free from infestation. When the Mexican fruit fly was found in Texas in 1927 the number of trees was estimated at 5,000,000 of which not over 300,000 were of bearing age. There are now more than 5,000,000 trees of bearing age and no substantial increase in personnel has been made. This increase is needed for employment of additional inspectors.

(3) A reduction of $80, offsetting 1935 impoundment.

WORK DONE UNDER THIS APPROPRIATION

General. The work carried on under this item is concerned with the protection of fruit-growing areas of the United States from the danger of infestation by the Mexican fruit fly. This insect has reached the American border in the Lower Rio Grande Valley in Texas. It is carried frequently and in large numbers to the border communities particularly by shipments of infested fruit from points in Mexico and spreads from these border towns to reinfest the citrus groves of southern Texas. It is the purpose of the Federal quarantine to prevent the spread of this insect to other fruit-growing areas, to eradicate the infestation in Texas and to reduce the fruit fly population as much as possible in the areas immediately adjacent in Mexico in order to reduce the danger of reinfestation from that source. In this effort there has been good cooperation received from the local Mexican officials and from Mexican residents of Mexican border towns. However, commercial fruit raising is not practiced on the Mexican side at this point and hence such Mexican fruits as mangoes, etc., preferred fruit fly hosts, are brought from interior points and with them have come as many as 11,000 fruit fly larvae in a single month.

Grove and Packinghouse Inspection and Certification. A great deal of the work carried on under this project is described in note (2). The volume of the fruit is so great and it is so difficult to detect fruit fly stings in the early stages that inspection of the fruit is not adequate to prevent the certification of infested fruit and reliance is placed on sanitary requirements fixed by the regulations. Enforcement of these regulations requires that every producing orchard in the area be inspected every month to determine whether fallen fruit is being promptly destroyed. Once a year, following the end of the harvesting period, a tree to tree inspection is made to insure that no fruit has

been left on the trees by the pickers. When the fruit is harvested and before it leaves the grove, it is given an identifying mark which accompanies it through the packing house procedure, thus identifying every lot of fruit until it is packed and receives final certification for movement out of the area. At the packing houses, sanitary methods must be employed to insure the prompt destruction of culls and the careful handling of all fruit as well as the keeping of each lot of fruit separate so that the grove of origin with respect to each lot of fruit may be known.

Spray and Control in Mexico. There continue to be found infestations of the Mexican fruit fly across the line in Mexico in the vicinity of Matamoros. It is necessary that there be certain inspection and cleanup work performed, all of which is done with the hearty cooperation of the citizens of Mexico residing in the infested area. It will be necessary to continue this work in order to prevent the building up of infestations immediately adjacent to the American citrus cultures, which would be a constant menace to citrus production in the Rio Grande Valley.

Spray and Control in Texas. The use of traps to determine the presence or absence of the Mexican fruit fly has become of greatly increased importance due to the development of a new type of trap made of glass which is more attractive to this insect than was the metal trap used against the Mediterranean fruit fly in Florida. In addition to the trapping program, the groves in which flies are found are sprayed with a poison spray made of nicotine sulphate. It is not believed that the traps are important factors in the control of this insect, but their use to determine distribution and abundance is better than any other means of scouting available.

Road Stations. Control of movement of fruit out of the quarantined area is greatly simplified due to the fact that there are but few avenues for traffic. Two railroads and two highways leave the Valley. The acceptance of fruit for transportation by rail is subject to control by the cooperation of the roads themselves. Movement by truck and in passenger cars is controlled by the operation of two road stations. Trucks and cars moved 1,122,446 boxes, bushels, and sacks of fruit during the last shipping season for the quarantined area.

(e) CITRUS CANKER ERADICATION

Appropriation, 1932	$40,000	
Appropriation, 1933	30,000	
Appropriation, 1934	25,000	
Appropriation, 1935	12,892	(a)
Budget Estimate, 1936	13,485	
Increase, Budget 1936, compared with Appropriation, 1935	593	(b)

(a) Includes $593 to cover 5% salary adjustment for 1935 (95%), as follows: (1) $257 transferred from Bureau of Animal Industry: and (2) $336 from fund authorized by Sec. 21(e) of Act of March 28, 1934.

(b) Increase of $593 compared with 1935 appropriation consists of 5% salary restoration, 1936 (to 100%).. ....

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or Decrease 5% Salary Restoration	Increase or Decrease Working Funds
Obligated:					
Citrus canker eradication.....	$11,597	$12,892	$13,485	$593 (1)	---
Unobligated:					
Salary reduction impoundments.....	459	---	---	---	---
Other amounts unobligated.....	12,944	---	---	---	---
Total appropriation....	25,000	12,892	13,485	+ 593	

(1) The increase of $593 is for 5% salary restoration, 1936 (to 100%).

CHANGE IN LANGUAGE

The elimination of the words", and, no expenditures shall be made for these purposes until a sum or sums at least equal to such expenditures shall have been appropriated, subscribed, or contributed by State, county, or local authorities, or by individuals or organizations for the accomplishment of such purposes" from the language of this item is recommended in interest of simplification and uniformity. Furthermore, the inclusion of these words may prevent prompt action necessary in case of an outbreak, and may, unless all sections are equally interested and prompt, prevent or delay work in States or localities which have provided a fair and adequate proportion of funds required for work in their section.

WORK DONE UNDER THIS APPROPRIATION

Work carried on under this appropriation provides for the eradication of the bacterial disease of citrus known as citrus canker. These activities are now carried on in cooperation with the States of Louisiana and Texas. Through intensive inspection of nurseries and citrus groves an effort is made to locate and destroy all trees infested with this dreaded disease. As a result of the vigorous campaign which has been carried on against this disease in the past it is practically eliminated from the important commercial citrus areas. However, some isolated infections occur sporadically. The states that were infested are maintaining a close inspection of all citrus properties and this should be continued. The infections have not been eliminated in Louisi-

ana and Texas and because of the extreme infectiousness of this disease scattered infections occur in dooryard plantings outside of commercial districts. These are a menace to citrus cultures and active cooperation is extended to these states. Continued inspection work and eradication work is essential until the disease has been completely eliminated.

EMERGENCY FUNDS

Direct Allotment

Projects	Obligated 1934
Civil Works Projects:	
Citrus canker eradication.....	$1,450

(f) PHONY PEACH ERADICATION

Appropriation, 1932	$97,000
Appropriation, 1933	61,480
Appropriation, 1934	52,659
Appropriation, 1935	47,645 (a)
Budget Estimate, 1936	49,828
Increase, Budget 1936, compared with Appropriation, 1935	2,183 (b)

(a) Includes $2,183 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) $996 transferred from Bureau of Animal Industry; and (2) $1,187 from fund authorized by Sec. 21(e) of Act of March 28, 1934.

(b) Increase of $2,183 compared with 1935 appropriation consists of 5% salary restoration, 1936 (to 100%).

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or Decrease: 5% Salary Restoration	Increase or Decrease: Working Funds
Obligated:					
Phony peach eradication	$43,613	$ 47,645	$ 49,828	$2,183 (1)	---
Unobligated:					
Salary reduction impoundments.....	326	---	---	---	---
Other amounts unobligated.....	8,720	---	---	---	---
Total appropriation.....	52,659	47,645	49,828	+ 2,183	

(1) The increase of $2,183 is for 5% salary restoration, 1936 (to 100%).

WORK DONE UNDER THIS APPROPRIATION

The work done under this subappropriation deals with the work on account of the phony peach disease by aiding the State inspection organizations in preventing the distribution of exposed nursery stock to uninfected regions and with scouting to locate infected trees in the vicinity of peach nurseries. This cooperation is carried on in the States where the disease has been found to occur and from which the principal shipments of susceptible nursery stock are made. Infected trees in the vicinity of nurseries are being removed by the States concerned.

The work also includes scouting in orchards to locate infected trees. This is carried on in cooperation with states and local agencies which remove the infected trees. The accurate determination of diseased trees requires special training and is one of the important phases of the eradication effort carried on with funds provided under this item. Scattered infections have been found in the States of Alabama, Florida, Georgia, Arkansas, Illinois, Oklahoma, Louisiana, Mississippi, Missouri, North Carolina, South Carolina, Tennessee, and Texas. Continuation of the work is necessary to prevent the spread of the disease from the area now infected.

The phony peach disease is a serious, infectious disease which makes peach orchards unprofitable by reducing both the size and the quality of the crop. It has proved disastrous to peach growing where it has become established. Removal of diseased trees is the only known method of control. Local spread from tree to tree or from orchard to orchard is believed to be caused by an insect, the peach borer, and long distance spread is believed to be through the shipment of nursery stock containing diseased trees which are then set out in orchard form where they may then serve as new centers of infection..

EMERGENCY FUNDS

Direct Allotments

Projects	Obligated, 1934
Civil Works Projects:	
Phony-peach eradication.....	$5,950

(g) DATE SCALE CONTROL

Appropriation, 1932	$ 65,460
Appropriation, 1933	38,615
Appropriation, 1934	27,925
Appropriation, 1935	23,812 (a)
Budget Estimate, 1936	24,856
Increase, Budget 1936, compared with Appropriation, 1935	1,044 (b)

(a) Includes $1,044 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) $487 transferred from Bureau of Animal Industry; and (2) $557 from fund authorized by Sec. 21(e) of Act of March 28, 1934.

(b) Increase of $1,044 compared with 1935 appropriation consists of 5% salary restoration, 1936 (to 100%).

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease: 5% Salary Restoration	Increase or decrease: Working Funds
Obligated:					
Date scale control...	$26,645	$23,812	$ 24,856	$1,044 (1)	---
Unobligated:					
Salary reduction impoundments.....	1,280	---	---	---	---
Total appropriation...	27,925	23,812	24,856	+ 1,044	

(1) The increase of $1,044 is for 5% salary restoration, 1936 (to 100%).

WORK DONE UNDER THIS APPROPRIATION

The work done under this subappropriation is for the purpose of carrying on effective scouting and eradication work. Data scale was found rather generally infesting the date plantings in the southwest a number of years ago and in cooperation with the States of California and Arizona the eradication project has been going forward with fewer and smaller infestations being found every year. Because of the possibility that infestation may persist for considerable periods of time under the leaf bases where they are not visible without cutting through the layers of fiber which cover them a careful inspection of date plants cannot safely be eliminated until sufficient time has elapsed to insure that the scale insects, if present, would have crawled out on the leaves where they can be seen. The work is dependent upon frequent and careful inspections in order to detect new infestations on the leaves before they have time to spread to other trees. For this reason careful inspections must be made and the reduction made in 1934 has been absorbed by lengthening the period between these inspections. Further extension of these periods cannot be safely made until at least another year has elapsed.

(h) FOREST INSECTS

Appropriation, 1932	$ 253,074
Appropriation, 1933	222,436
Appropriation, 1934	194,270 (a)
Appropriation, 1935	152,335
Budget Estimate, 1936	159,015 (b)
Increase, Budget 1936, compared with Appropriation, 1935	6,680 (c)

(a) Includes $9,800 transferred from "Fruit Insects", and $4,500 transferred from "Household and Stored Products Insects."

(b) Includes $6,680 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) $2,784 transferred from Bureau of Animal Industry; and (2) $3,896 from fund authorized by Sec. 21(e) of the Act of March 28, 1934.

(c) Increase of $6,680 compared with 1935 appropriation consists of:

5% salary restoration, 1936 (to 100%).....	+ $6,680
Increase in working funds available for obligation.....	+ 80
Reduction: Offset of 1935 impoundment.....	- 80
	+ 6,680

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or Decrease: 5% Salary Restoration	Increase or Decrease: Working Funds
Obligated:					
Forest insects.....	87,484	$ 94,396	$ 98,912	$4,436	+ $ 80 (2)
Introduced forest insects.....	55,097	57,859	60,103	2,244	---
Shade-tree and hardy-shrub insects.....	9,800	---	---	---	---
Total obligated.....	152,381	152,255	159,015	6,680(1)	+ 80
Unobligated:					
Salary reduction impoundments.....	6,792	---	---	---	---
Other legislative impoundments.....	235	80	---	---	- 80 (3)
Other amounts unobligated.....	34,862	---	---	---	---
Total appropriation...	194,270	152,335	159,015	+ 6,680	

The increase of $6,680 for 1936 includes:

(1) An increase of $6,680 for 5% salary restoration, 1936 (to 100%).

(2) An increase of $80 in the project "Forest Insects."

(3) A reduction of $80 offsetting 1935 impoundment.

CHANGE IN LANGUAGE

The addition of the words " and for insects affecting ornamental trees and shrubs" is recommended to provide authorization for investigations on insects which attack trees and shrubs used for park, ornamental and shade purposes as contrasted with those growing in forests. Specific authority for such work is not provided elsewhere in the present appropriation act and it is necessary that at least a limited amount of work be done on the insect pests of trees having such high aesthetic value.

WORK DONE UNDER THIS APPROPRIATION

General. This item provides for investigations on insects injurious to forests and forest products to determine methods of control of such pests and for planning and directing campaigns to control serious outbreaks that occur over large forested areas. Investigations to develop methods of control for insects attacking shade trees also come under this item.

Forest Insects. The work under this project is concerned with investigations on, and the control of, insects attacking forest trees and forest products. The work is carried on from 7 field stations, located either at the regional headquarters maintained by the Forest Service of the Department or at their regional experiment stations.

The cooperative control service is the largest activity of this project. The Bureau of Entomology and Plant Quarantine is responsible for recommending to the Forest Service, National Park Service, the Bureau of Indian Affairs and private timber owners when and where to conduct control operations against important timber destroying bark beetles or defoliators. To do this it is necessary to make extensive surveys of forests where abnormal insect activities are reported. The information secured from these surveys is used as a basis for recommendations for the control work against these important native pests of our forests.

Investigations are under way to develop or improve methods of control. During the past three years several improvements have been effected which have resulted in reducing the cost of control for certain major pests from 25% to 50%. Further studies are needed to perfect methods which will make it possible to apply control measures throughout the dry summer season and to develop more effective and economical measures for the control of defoliators and certain bark beetles.

Many forest insects cannot be controlled by direct methods and must be combatted through forest management. The white pine

weevil is one of these. Investigations on this pest have demonstrated that at least in certain regions sound silviculture practices will insure control so that straight timber can be produced. The locust borer is another pest that must be controlled by forest management but as yet no satisfactory practical methods have been developed. Special attention is being given to this problem.

Enormous losses occur each year from insects which attack forest products in use. Many different kinds of insects such as termites, powderpost beetles, various borers, etc., are responsible for these losses. Effective methods for the control of some of these have been devised and are recommended. Continued work is necessary to develop effective methods for other pests for which present measures are not fully applicable. At the present time special attention is devoted to the possibility of using tree poisons for treating wood before the tree is felled.

Introduced Forest Insects. The two chief objectives of the investigations under way on several introduced forest pests occuring in the northeastern states are: (1) Control of these introduced insects through the introduction and colonization and liberation of natural enemies; and (2) the development of effective sprays or dusts which may be used for artificial control. These activities are headquartered at laboratories at Melrose Highlands, Massachusetts, and New Haven, Connecticut. Special attention is now being given to:

(a) The European pine shoot moth which is becoming widely established throughout the New England States and is particularly destructive to pines set out in the reforestation or water sheds and denuded lands.
(b) The beech scale now established in Maine, New Hampshire, and Vermont and, when associated with fungus disease, this pest threatens the destruction of valuable native beech.
(c) The birch leaf miner, recently introduced, which is rapidly spreading in the New England area and which is especially injurious to white birch.
(d) The larch case bearer, a recently introduced insect which is defoliating larch over a considerable area.
(e) Investigations on the gypsy and browntail moth are also receiving a limited amount of attention.

Shade Tree Insects. No funds which could be allotted specifically for work on this subject are now available. The amount allotted for the fiscal year 1934 was not continued in the fiscal year 1935. Some incidental work is done on insects attacking shade and ornamental shrubs. This is confined to the answering of requests for information received from property owners throughout the country. Approximately 3,000 such inquiries are received annually.

EMERGENCY FUNDS

(1) Direct Allotments

Projects	Obligated, 1934	Estimated obligations, 1935
Loans and relief in Stricken Agricultural Areas. (Transferred from Forest Service): To provide relief in stricken agricultural areas through encouraging and assisting a systematic planting and growth of trees, shrubs, plants, etc. (shelter belt).....	---	$10,000

(2) Projects financed through other Governmental Agencies

Projects	Obligated, 1934	Estimated obligations, 1935
Emergency Conservation work (Authorized by Act of March 31, 1933; allotment through War Department):		
Control of insect enemies of forests	$16,637	47,363

(i) GYPSY AND BROWN-TAIL MOTH CONTROL

	Regular	P.W.A.	Total
Appropriation, 1932	$648,580	- - -	$648,580
Appropriation, 1933	- - -	- - -	400,000
Appropriation, 1934	408,388	1,545,085	1,953,473
Appropriation, 1935	- - -	475,535	475,535
Budget Estimate, 1936..	400,000	- - -	400,000
Net change, Budget 1936, compared with Appropriation, 1935..	(a)+400,000	-475,535	- 75,535

(a) The increase of $400,00 is apparent only, as this work was financed during 1935 from an allotment of $475,535 from the Federal Emergency Administration of Public Works. As a matter of fact, therefore, the Budget for 1936 contemplates a decrease in working funds of $75,535. The Budget for 1935 authorized the use of $99,282 from the unexpended balance of the Public Works allotment for Inspection and Certification and the Appropriation Act for 1935 authorized the use of $360,000 from the unexpended balance of Public Works funds for control work. This latter amount was further augmented by $16,253 which was an additional unexpended balance of the Public Works allotment carried forward into 1935.

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease: 5% Salary Restoration	Increase or decrease: Working Funds
Obligated:					
Control:					
Regular Funds....	$36,207		$300,718	---	+ 300,718(1)
P.W.A. Funds.....	1,545,085	376,253	----		- 376,253(2)
Inspection and certification:					
Regular Funds....	105,000	---	99,282	---	+ 99,282(3)
P.W.A. Funds.....	---	99,282	---	---	- 99,282(4)
Total, obligations:					
Regular Funds.....	141,207	---	400,000	---	+ 400,000
P.W.A. Funds.....	1,545,085	475,535	---	---	- 475,535
Unobligated:					
Regular Funds:					
Salary reduction impoundments...	9,800	---	---	---	---
Other legislative impoundments...	351	---	---	---	----
Other amounts unobligated.....	259,798	---	---	---	---
P.W.A. Funds.	---	---	---	---	---
Total regular appropriations.....	408,388	---	400,000	+ 400,000	
Total P.W.A.....	1,545,085	475,535	---	- 475,535	
Total all funds.....	1,953,473	475,535	400,000	- 75,535	

The decrease of $75,535 in total funds for 1936 includes:

(1) An increase of $300,718 in regular funds for the project "Control." No regular funds were appropriated for this item in the 1935 appropriation act, work being carried on under an allotment of funds from the Federal Emergency Administration of Public Works. The amount above indicated is required for control activities on gypsy and brown-tail moths during 1936. These activities include the maintenance of a barrier zone and the extermination of outlying infestations. The control work should be continued to prevent the pests from spreading into uninfested areas which have, during the last twenty years, been given effective protection.

(2) A decrease of $376,253, in Public Works Administration funds for the project "Control." This includes a specific allotment of $360,000 of Public Works Administration funds made available by the 1935 appropriation act from balances remaining unexpended from an allotment made in 1934, and a general unexpended balance of $16,253 remaining from the original 1934 allotment. This combined sum will be exhausted during the fiscal year 1935, and as indicated by note, (1), it is planned to carry on the activity under a reduced regular appropriation in 1936.

(3) An increase of $99,282 in regular funds for the project "Inspection and Certification." No funds were provided for this project in the 1935 appropriation act, work being carried on under an allotment of funds from the Federal Emergency Administration of Public Works. This increase represents an amount equal to that of the 1935 Public Works Administration allotment and is the minimum necessary to conduct the inspection and certification of products originating in the gypsy moth quarantined area designated for shipment to points outside. This service is essential to protect uninfested areas from the danger of importing various stages of the gypsy moth with shipments of forest and nursery products, and also to enable industries within the infested area to ship their products under a Federal certificate. If this project were abandoned, it would mean the establishment of state quarantines, which are practically embargoes, against shipments from the gypsy moth area of all materials capable of carrying infestations.

(4) A decrease of $99,282 in Public Works Administration funds for the project "Inspection and Certification." This is a specific allotment of Public Works Administration funds from the unexpended balance of the original 1934 Public Works Administration allotment, and will be exhausted during the fiscal year 1935. As indicated by note (3), it is planned to carry on this project in 1936 under a regular appropriation in the same amount.

CHANGE IN LANGUAGE

The inclusion of the word "control" in the title and the elimination of the words "of the sum allotted for this purpose for the fiscal year 1934 by the Public Works Administration shall be available only for expenditure during the fiscal year 1935", is recommended for the following reasons:

The addition of the word "control" to the title is in the interest of uniformity and eliminates possible misunderstanding with the investigational work on these pests which is carried on under the item "Forest Insects."

The phrase referring to the allotment of funds from the Public Works Administration will not be applicable. No allotment from these emergency funds is contemplated.

WORK DONE UNDER THIS APPROPRIATION

General. This item provides for the continuation of the control work on the gypsy and brown-tail moths and for the inspection and certification of products to meet the requirements of the Federal quarantines for these insects.

Control. The work under this project is concerned with the control and extermination of infestations of the gypsy moth and brown-tail moth which are so located as to be susceptible to spread by natural means to points outside the infested area. This work is divided into "Scouting and Extermination in the Barrier Zone" and "Scouting and Extermination Outside the Barrier Zone."

The Barrier Zone is an area some 20 to 30 miles in width, extending from Long Island Sound on the south to the Dominion of Canada on the north. This strip of land extends over into New York State for its western boundary and into the New England States for its eastern boundary, the center of the zone being approximately the eastern New York State boundary line. Spread of moths by natural means from the generally infested area in New England into and through the Barrier Zone is controlled by the application of extermination measures in this zone. This requires scouting to locate infestations and their treatment to eliminate colonies which may be found.

The gypsy and brown-tail moths have been kept confined to the comparatively limited area comprising the New England states. Gypsy moth has been found on Long Island and Bronx, New York, northeastern Pennsylvania and New Jersey. These are the only known infestations for either of these insects outside of New England. The infestation in New Jersey is small and is believed to be due to a colony which was not found and destroyed in the course of previous work there. The nature of the work in these outlying infestations is similar to that employed in the Barrier Zone, consisting of scouting to locate infestations followed by the application of suppressive measures with the object of complete extermination. The infestation in Pennsylvania was found in 1932 and the area involved has been increasing as scouting has progressed until it now takes in approximately 880 square miles. Cooperation of the States concerned is an important factor in the progress which has been made in dealing with these infestations.

Inspection and Certification. The work under this project deals with the inspection and certification of products originating in the quarantined area designated for shipment to points outside. The possibility of distribution of the gypsy moth over long distances on shipments of products which might carry it is illustrated by records on such shipments. During the period the quarantine has been in force up to the end of the fiscal year 1934 more than 102,652 gypsy moth egg clusters have been removed from shipments as well as 11,525 specimens in other than the egg stage. Infestations have actually been discovered on and removed from shipments destined to every State in the Union except Idaho, Montana, Nevada and Oregon. This inspection and certification covers commodities which are grouped into nursery, quarry, forest and evergreen products. The certification is based on inspection and these commodities thus inspected and certified are eligible for interstate transportation. Industries located within the infested area and which deal with articles likely to carry this insect are enabled under Federal certification to ship their products in the normal way. If there were no Federal quarantine, State quarantines, which are practically embargoes, would be in effect in nearly every State. Interstate business in such articles would operate under a severe handicap in the face of such a system of State embargoes. During the fiscal year 1934 certification covered: Evergreen products 501 carloads, 132,452 L.C.L.; forest products 2,766 carloads, 5 barge loads, and 39,131 L.C.L.; nursery products 80 carloads and 29,383, L.C.L.; stone and quarry products 18 carloads, 72 barge loads and 568 L.C.L.

EMERGENCY FUNDS

Direct Allotments

Projects	Obligated 1934	Estimated obligations, 1935
Public Works Allotments (National Industrial Recovery Act):		
Gypsy and brown-tail moth control:		
New York	$30,561	$439
Vermont	494,165	358
Massachusetts	306,234	6,316
Connecticut	247,894	5,781
Pennsylvania	466,231	3,359
Various	- - -	459,282
Total P.W.A. allotments	1,545,085	475,535
Civil Works Projects:		
Extermination of the brown-tail moth	3,834	---

(j) BLISTER RUST CONTROL

	Regular	P.W.A.	Total
Appropriation, 1932	466,200	---	466,200
Appropriation, 1933 .....(a)	392,400	---	392,400
Appropriation, 1934 .....(b)	370,657	879,762	1,250,419
Appropriation, 1935	---	1,170,238	1,170,238
Budget Estimate, 1936	250,000	---	250,000
Net Change, Budget 1936, compared with Appropriation, 1935 .....(c)	+250,000	-1,170,238	- 920,238

(a) Excludes $17,500 transferred to Forest Pathology, Bureau of Plant Industry.

(b) Excludes $13,282 transferred to Forest Pathology, Bureau of Plant Industry.

(c) The increase of $250,000 is apparent only, as this work was financed in 1935 by an allotment of $1,170,238 from the Federal Emergency Administration of Public Works. The Budget for 1936 therefore, contemplates an actual decrease of $920,238 in working funds.

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease: 5% Salary Restoration	Increase or decrease: Working Funds
Obligated:					
Eastern Control Program:					
Regular funds.	$83,587	---	$120,980	---	+$120,980(1)
P.W.A.Funds...	273,083	551,349	---	---	- 551,349(2)
Western Control Program:					
Regular Funds.	118,075	----	120,995	---	+120,995(3)
P.W.A. Funds..	606,679	610,864	---	---	-610,864(4)
Quarantine Enforcement:					
Regular Funds.	7,725	---	8,025	---	+ 8,025(5)
P.W.A. Funds..	---	8,025	---	---	- 8,025(6)
Total, obligations:					
Regular Funds:	209,387	---	250,000	---	+250,000
P.W.A. Funds..	879,762	1,170,238	---	---	1,170,238
Unobligated:					
Regular Funds:					
Salary reduction impoundments.....	9,800	---	---	---	---
Other amounts unobligated..	151,470	---	---	---	---
Total, Regular appropriation.	370,657	---	250,000	---	+250,000
Total, P.W.A.funds	879,762	1,170,238	---	---	-1,170,238
Total, all funds.	1,250,419	1,170,238	250,000	- 920,238	

The decrease of $920,238 in total funds for 1936 includes:

(1) An increase of $120,980 in regular funds for the project "Eastern Control Program." No regular funds were provided for this project in 1935, work being carried on under the unexpended balance of an allotment made during the fiscal year 1934 by the Federal Emergency Administration of Public Works. The amount available for use in 1935 is $551,349. These funds will not be available in 1936. The continuation of the control work on white pine blister rust in the East is important to protect the value of white pine stands as well as to control the disease in areas in which white pines are used for reforestation. These funds allocated for this work will be used for surveys to locate pines in pine areas where ribes are growing; demonstrations for methods of control; supervision of cooperative control work which is to be carried on by funds supplied by state, county, town and local agencies or on national parks with funds supplied by emergency appropriations; and checking of eradication work to determine its thoroughness.

(2) A decrease of $551,349 in Public Works Administration funds for the project "Eastern Control Program." This amount, a portion of the unexpended balance of an allotment made during the fiscal year 1934 by the Federal Emergency Administration of Public Works, constitutes the only funds available for this project in 1935. These funds will be exhausted during the year. As indicated by note (1), it is planned to carry on the work in 1936 with a greatly reduced regular appropriation.

(3) An increase of $120,995 in regular funds for the project "Western Control Program." No regular funds were provided for this project in 1935, work being carried on under the unexpended balance of an allotment made during the fiscal year 1934 by the Federal Emergency Administration of Public Works. The amount available for use in 1935 is $610,864. These funds will not be available in 1936. The amount to be allotted for work in the western area will be used for: Surveys to locate pines and areas where ribes grow; application of methods of eradicating ribes plants; supervision of control work done on national forests, national parks and private lands with funds supplied from other sources; and checking control work to determine its thoroughness. The amount has been reduced to the minimum required, with the cooperation which it is anticipated will be supplied, to protect the valuable white and sugar pine stands in western United States and permit the reproduction of white pine trees in the western areas.

(4) A decrease of $610,864 in Public Works Administration funds for the project "Western Control Program." This amount, a portion of the unexpended balance of an allotment made during the fiscal year 1934 by the Federal Emergency Administration of Public Works, constitutes the only funds available for this project in 1935. These funds will be exhausted during the year. As indicated by note (3); it is planned to carry on the work in 1936 with a greatly reduced regular appropriation.

(5) An increase of $8,025 in regular funds for the project "Quarantine Enforcement."

(6) A decrease of $8,025 in Public Works Administration funds for the project "Quarantine Enforcement." The increase and decrease referred to in notes (5) and (6) relate simply to the plan of providing funds in 1936 to continue activities carried on in 1935 under Public Works Administration funds, which will be exhausted during the year. The amount involved is necessary to conduct quarantine enforcement work without which white pine blister rust would readily be spread through the shipment of rust infected pines or currant and gooseberry plants likely to carry the disease.

CHANGE IN LANGUAGE

The inclusion of the title "Blister Rust Control" and the language providing for this work is necessary to provide authorization for work previously carried on as a regular activity of the Department but which during the fiscal year 1935 was excluded from the regular appropriations and work carried on with an allotment from the Public Works Administration.

WORK DONE UNDER THIS APPROPRIATION

General. Under this appropriation, campaigns are conducted for the suppression and control of white pine blister rust by cooperating with state organizations, counties, towns, individual land owners and with the Forest Service, National Park Service and Indian Service, in the eradication of ribes (currant and gooseberries), which serve as carriers of the disease, as well as in the application of measures to delay the spread of the disease into uninfected regions. The work under this project provides national leadership for the control of the white pine blister rust and is carried on in cooperation with the appropriate agencies.

Eastern Control Programs. The Department is cooperating in the control of blister rust through formal and informal arrangements with governmental agencies, states, counties, townships, individuals and other local agencies in the control of white pine blister rust in white pine growing in states of Connecticut, Maine, Massachusetts, Michigan, Minnesota, New Hampshire, North Carolina, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Wisconsin, Maryland, Virginia, West Virginia, Ohio, Illinois, Indiana, Iowa, Tennessee, Kentucky, Georgia, and South Carolina. In this work, the Department provides the leadership and coordination of the control activities and the states and their cooperators supply the supervision and labor. The Eastern control program must be continued (1) to assure the productivity of white pine forests containing standing timber valued at over $126,000,000; (2) to preserve regional scenic and recreational white pine values of great economic importance; (3) to protect thousands of acres of young growth which will form the next timber

crop; (4) to maintain control of the disease on initially protected pine lands, aggregating 8,500,000 acres; (5) to apply control measures on the remaining unprotected pine acreage in the infested states; and (6) to extend protection to white pines in disease-free regions as rapidly as they are invaded by the natural spread of the disease. This is a national problem, requiring Federal leadership and technical knowledge to coordinate cooperating agencies.

Western Control Program. In the western area, the control of white pine blister rust is carried on in the States of California, Idaho, Montana, Oregon, Washington, Wyoming and Colorado. In this area, the Department assists cooperating states and local agencies in the application of control measures on state and privately owned lands and furnishes leadership and technical assistance in coordinating control activities carried on in these areas by the Forest Service in protecting valuable white pines on National Forests, to the National Park Service and Indian Service in protecting valuable areas of white pines in National Parks and on Indian Reservations. The forested lands in this area are of mixed ownership and control can be accomplished only by combining and coordinating efforts of all owners into a single program. The blister rust control program in the western United States must be continued (1) to assure the productivity of forest lands bearing western white pine and sugar pine timber valued at $288,000,000 and thus maintain industries dependent upon the white pines, which represent 50% of the business of the western white pine region as well as valuable economic and business interests in the sugar pine region of California; (2) to protect millions of acres of young growth that will form the next timber crop; (3) to prevent forced timber cutting and demoralization of the Nation's lumber markets; (4) to maintain control of the disease in areas already protected; (5) to apply control measures on the remaining unprotected areas; (6) to preserve scenic and recreational white pine values of great economic importance; and (7) to extend protection to white pines in uninfested regions as rapidly as they are invaded by the natural spread of the rust.

Quarantine Enforcement. The work under this activity is concerned with the enforcement of the Federal Quarantine on account of white pine blister rust. For the most part, this work consists of (1) inspecting the premises and environs of nurseries in which pines susceptible to the disease are grown; (2) preventing the interstate shipment of rust-infested pines or currant and gooseberry plants likely to carry the disease and not meeting the requirements of the Federal quarantine; and (3) cooperating with nurseries, etc., in the protection of pine nursery stock against exposure to blister rust.

EMERGENCY FUNDS

Direct Allotments

Projects	Obligated, 1934	Estimated obligations, 1935
Public Works Allotments (National Industrial Recovery Act):		
White Pine Blister Rust Control. Checking of infested areas and eradication of currant and other plants of the genus Ribes from which infestation is spread to pine:-		
Connecticut	$13,175	$ 9,900
Maine	30,725	43,500
Massachusetts	21,805	30,500
New Hampshire	23,025	46,200
Rhode Island	6,230	7,000
Vermont	20,405	11,900
New York	42,990	49,400
Pennsylvania	15,750	30,400
New Jersey	1,077	1,700
Michigan	21,425	47,800
Minnesota	33,225	42,000
Wisconsin	17,650	31,500
Iowa	4,730	8,500
Illinois	1,630	2,600
Indiana	1,230	3,000
Ohio	10,045	8,300
Georgia	1,230	4,500
Kentucky	430	7,300
Maryland	5,630	14,100
North Carolina	3,150	24,500
South Carolina	960	5,000
Tennessee	1,845	12,000
Virginia	2,920	34,000
West Virginia	1,460	17,000
Idaho	273,700	167,500
Montana	37,920	42,900
Washington	59,700	46,000
California	141,700	210,000
Oregon	30,000	15,000
Wyoming	3,000	6,000
Colorado	2,500	6,500
Oregon	18,500	31,500
Various	30,000	152,238
Total	879,762	1,170,238

(k) DUTCH ELM DISEASE ERADICATION

Appropriation, 1932	$13,332 (a)
Appropriation, 1933	3,000
Appropriation, 1934	3,000
Appropriation, 1935	155,618 (b)
Budget Estimate, 1936	261,156
Increase, Budget 1936, compared with Appropriation, 1935	105,538 (c)

(a) Provided in Second Deficiency Act, 1931.

(b) Includes $5,618 to cover 5% salary adjustment for 1935 (to 95%) as follows: (1) $2,475 transferred from Bureau of Animal Industry; and (2) $3,143 from fund authorized by Sec. 21(e) of Act of March 28, 1934.

(c) Increase of $105,538 compared with 1935 appropriation consists of:

5% salary restoration, 1936 (to 100%)	+ $5,618
Increase in working funds for 1936	+100,000
Reduction: continuation of 1935 impoundment..	- 80
	+105,538

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease 5% Salary Restoration	Increase or decrease Working Funds
Obligated: Dutch elm Disease eradication.....	3,000	$155,538	$261,156	$5,618(1)	+$100,000(2)
Unobligated: Legislative impoundments.....	----	80	---	---	- 80 (3)
Total appropriation...	3,000	155,618	261,156	+ 105,538	

The increase of $105,538 for 1936 includes:

(1) An increase of $5,618 for 5% salary restoration, 1936 (to 100%).

(2) An increase of $100,000 for scouting and eradication work. Funds available for the eradication of the Dutch elm disease have been inadequate to carry on intensive eradication work necessary to combat this menace which threatens the destruction of our elms. It is believed that the disease gained entry into the United States through infected logs imported from Europe and sent to veneer factories located at several points within the United States. The environs of such factories and areas adjacent thereto have not been adequately scouted. The situation in the metropolitan area of New York is especially critical. It is essential that this main infected area be rescouted, the infected trees located and removed, It is impossible to determine all infected trees by one inspection. Incipient infections are difficult to locate. In some instances, trees may be partially diseased for a few months before visible signs of the disease appear. In general, however, the disease organisms grow so rapidly within the tree that healthy trees have been killed within a few weeks. It is known that the disease may be transmitted from tree to tree by bark beetles which occur in large numbers in this area. These introduced bark beetles were established in this section before the disease was discovered and are known to occur over considerable areas where infection has not yet been found. The beetles have at least two broods and those emerging from diseased and dying trees during the latter part of the summer have had ample opportunity to carry the disease to healthy trees. Such infections may not have developed to a point where it is possible to make positive diagnosis. Scouting should be intensive and conducted at such frequent intervals that the infected trees may be located as soon as practical so they can be destroyed before the beetles have had an opportunity to transmit the disease to new trees. The increase requested will provide only the minimum required for necessary work.

(3) A reduction of $80, continuing 1935 impoundment.

CHANGE IN LANGUAGE

The insertion of the words "to be immediately available" is recommended to provide funds for scouting, particularly in areas not now known to be infected, as the new foliage appears or shortly thereafter as this is the period when scouting is particularly effective.

The elimination of the phrase "Provided, That this sum shall be reduced by an amount equal to any amount that may hereafter be allotted for the purposes named herein from any Federal relief or other Federal emergency appropriations" is recommended. No such special allotment is now contemplated for the fiscal year 1936.

The addition of the phrase "Provided, That no part of the money herein appropriated shall be used to pay the cost or value of trees or other property injured or destroyed" is recommended. Such proviso is in the interest of the Federal Government and is usually included in appropriations for the control or eradication of plant pests.

WORK DONE UNDER THIS APPROPRIATION

Funds provided under this appropriation are used for scouting to locate trees infected with the Dutch elm disease and cooperating with states and local agencies in the removal and destruction of infected trees. It is impossible to definitely distinguish the causative organism of the Dutch elm disease by field examinations. An essential part of the work of eradication consists of laboratory studies to examine parts of suspicious trees and definitely determine if the disease is present. The heaviest infected area is in the vicinity of Newark, New Jersey, and New York City, New York, and it seems probable that New York harbor is the center of the infection. Infected trees have been found some 40 miles from this center but near the margin of the area included in a radius of forty miles, the diseased trees are more widely scattered. During the summer of 1934, the State of New Jersey appropriated and expended $30,000 for the elimination of infected trees. Additional amounts have also been expended by state, local agencies and private individuals, so the total expended by cooperating agencies is somewhat more than $234,000. Recently the State of New York made available an appropriation of $155,000, a large part of which will be expended during the present active season for the removal and destruction of infected trees.

EMERGENCY FUNDS

Direct Allotments

Projects	Obligated, 1934	Estimated obligations, 1935
Public Works Allotments (National Industrial Recovery Act):		
Dutch Elm Disease Eradication:		
New Jersey	$37,000	$ 3,000
Ohio	10,840	---
New York	10,028	---
Pennsylvania	4,770	---
Connecticut	3,885	---
Massachusetts	1,943	---
District of Columbia	5,534	---
Various	---	3,000
Total	74,000	6,000
Civil Works Allotments:		
Dutch Elm Disease Control	12,500	---

(1) TRUCK CROP AND GARDEN INSECTS

Appropriation, 1932	$ 512,877
Appropriation, 1933	462,605
Appropriation, 1934	414,100 (a)
Appropriation, 1935	315,853 (b)
Budget Estimate, 1936	328,418
Increase, Budget 1936, compared with Appropriation, 1935	12,565 (c)

(a) Includes $24,100 transferred from "Household and Stored Products Insects."

(b) Includes $12,805 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) $5,825 transferred from Bureau of Animal Industry; and (2) $6,980 from fund authorized by Sec. 21(e) of Act of March 28, 1934.

(c) Increase of $12,565 compared with 1935 appropriation consists of:

5% salary restoration, 1936: (to 100%)	+ $12,805
Reduction: Continuation of 1935 impoundment.....	- 240
	+ 12,565

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or Decrease 5% Salary Restoration	Increase or Decrease Working Funds
Obligated:					
Truck crop Insects....	$151,246	$164,593	$171,381	$6,788	---
Berry insects.....	13,675	10,610	11,147	537	---
Sugar-beet insects....	68,592	72,130	74,890	2,760	---
Tobacco insects.....	38,686	29,800	30,900	1,100	---
Insects Affecting greenhouse and ornamental plants.....	38,063	38,480	40,100	1,620	---
Total, obligations....	310,262	315,613	328,418	12,805 (1)	---
Unobligated:					
Salary reduction impoundments.....	14,740	---	---	---	---
Other legislative impoundments.....	6,928	240	---	---	- $240(2)
Other amounts unobligated.....	82,170	---	---	---	---
Total appropriation....	414,100	315,853	328,418	+ 12,565	

The increase of $12,565 for 1936 includes:

(1) An increase of $12,805 for 5% salary restoration, 1936 (to 100%).

(2) A reduction of $240, continuing 1935 impoundment.

WORK DONE UNDER THIS APPROPRIATION

General. This appropriation provides for studies on insects and the development of means of controlling forms injurious to truck crop and garden plants including vegetables, flowers, bulbous plants, potted ornamentals and plants grown under glass, and includes those attacking such related crops as strawberries, raspberries, blackberries, sugar beets, tobacco and mushrooms.

Truck Crop Insects. For the year 1933, the main truck crops were valued at $ 533,679,000. These crops such as beans, peas, melons, potatoes, sweet potatoes, cabbages, onions, etc. are attacked by many different kinds of insect pests. Some of the more important pests that are now being studied are those which attack crops like cabbage, melons, lettuce and celery. Special attention is also being given to such pests as the Mexican bean beetle, Lima bean pod porer, various wireworms, turnip aphid, pea weevil, pea aphid, sweet potato weevil, introduced mole cricket and various vegetable weevils.

The development of satisfactory methods for the control of insects affecting vegetable and garden crops has assumed greater importance in recent years than at any time in the past. The development and expansion of the vegetable industry in the South and Southwest, the increased consumption of green food products and the demand that these be free from insect damage and insecticidal residues, are factors which have contributed to the increasing importance of this work. With the concentration of crops in certain areas, old pests have increased in abundance and the distribution and abundance of such recently introduced pests as the Porto Rican mole cricket and the vegetable weevil have increased. The mole cricket is proving to be an especially destructive pest in parts of the Atlantic Coastal Plain and no fully effective control is yet known. Several pests of cabbage and related plants previously only known in the north are now common in the south throughout the year. Fairly satisfactory remedies have been developed for the control of certain pests of truck crops. Many of these remedies involve the use of insecticides containing arsenic. Where heavy infestations occur the pests cannot be satisfactorily controlled without leaving excessive residues. This coupled with the careless use of insecticides by growers emphasizes the need of developing methods of control which will not leave harmful residues.

The adoption in 1933 of Federal grades for field peas emphasizes the importance of developing satisfactory and economical methods of controlling the pea weevil, which is the principal cause for the losses suffered because of reduction in grade. Studies now under way are concerned with the biology of the past; effects seed shattering at harvest and weevil hibernation have on weevil losses during the following crop year; and also the effect burning the straw in field, dusting with insecticides and the use of trap crops have on control.

Experiments are also being conducted to develop effective fumigation to protect dry peas in storage. During the past season the pea aphid occurred in outbreak numbers over considerable areas in the Pacific northwest. While this pest periodically causes losses to the canning industry, particularly in the more humid parts of the United States, this unusual outbreak emphasizes the importance of this insect as a pest. Recently many samples of canned peas have been found infested by pea weevils. This discovery emphasizes the necessity of developing methods for preventing infestation in fresh peas as well as the development of means of controlling the pest in dried peas.

Berry Insects. During 1933, the crop from small fruits known as berries, including strawberries, raspberries, blackberries, etc. was valued at $21,000,000. These small fruits are injured by a variety of insect pests for which no effective control is known. Investigations to develop effective controls should be continued in order that the growers may produce these crops without unnecessary losses. At present studies are carried on in the Pacific Northwest and along the eastern coastal plain. In the Northwest, special attention is being given to the development of measures for the control of the raspberry fruit worm, red spider, and the raspberry mite. A recent problem which has arisen in connection with the production of strawberries in the Northwest is the control of a European pest which attacks the ripe strawberry just beneath the cap. Another problem which has recently arisen in the Pacific Northwest is that associated with the control of several kinds of small insects known as thrips. Large numbers of these minute insects have been found in cans of raspberries and related fruits and this emphasizes the need of determining methods for control of these pests. Along the Atlantic Coastal Plain special attention is devoted to the control of the strawberry root aphid, a pest which causes material losses and is apparently associated with one of the important strawberry diseases. Investigations on this problem are carried on in cooperation with the Bureau of Plant Industry. Other insects which cause material losses along the Atlantic Coastal Plain are the strawberry mite and the strawberry weevil. Investigations to perfect methods for their control are under way at the laboratory at Chadbourn, North Carolina.

Sugar Beet Insects. The sugar beet leafhopper is the most important pest of sugar beets in the United States and investigations on this activity are concerned primarily with this insect. The sugar beet leafhopper transmits the destructive disease known as curly top and besides attacking sugar beets it may transmit the disease to other vegetables. In periods of great abundance it causes almost complete failure in the production of these crops and causes marked reduction in yields every year. One insect may transmit the disease to a number of plants. The leafhoppers infest the fields in large numbers during migration periods and direct control in the field has not been found possible. Surveys are made to determine the abundance of the leafhoppers and the availability of their favorite host plants in their natural breeding areas. Information secured from these surveys is used to advise growers well in advance of the planting season as to the possibility

of outbreaks. In California investigations are under way to determine the practicability of using direct measures of control against the insects in their breeding ground. The possibility of reducing the abundance of the insects by the elimination of their favorite hosts is also receiving attention. Many of the activities on sugar beet leafhoppers are carried on in cooperation with the Bureau of Plant Industry, State Experiment Stations and sugar companies.

Tobacco Insects. Investigations on tobacco insects are carried on both in the field and in the storages. Investigations in the field include studies on life history, habits, methods of control by the use of insecticides, attractants, baits and cultural practices. The control of the important tobacco pests such as the hornworm and flea beetle has, for the past 20 years or more, involved either the use of lead arsenate or Paris green. While tobacco is not considered as a food, there is apparently some danger to the users from insecticidal residues that may occur on the plant. There is an increasing demand on the part of the industry as well as the users that tobacco be free of insecticidal residues. This necessitates a restudy of the entire program of controlling insects affecting tobacco in the field. Results secured from some of the investigations now under way are promising. Their usefulness cannot, however, be determined until they have been tested over a longer period and in other localities where the activity of the moth is different because of seasonal climatic conditions.

Investigations on insects affecting tobacco in storage which have been under way for a few years were undertaken in response to the demand of the tobacco trade of the United States. They are chiefly concerned with the development of methods of controlling the recently introduced tobacco moth and the tobacco beetle in both the closed and open type of warehouses. Some very useful and interesting information has been secured and such conclusions as to control measures as have been developed have been made available to the trade. Aside from the protection of tobacco produced within the United States, these investigations have a bearing on the production of a product sufficiently free from insects to meet the requirements of countries to which American tobacco is exported.

Insects Affecting Greenhouse and Ornamental Plants. The work under this project deals with investigations to determine methods for controlling insects attacking flowering garden plants such as narcissus, tulip, dahlia, etc.; household and ornamental plants; insects injurious to flowers and all kinds of plants grown under glass; and insects injurious to mushrooms. The crop value for ornamental and greenhouse plants for 1933 was estimated in excess of $300,000,000. These crops are attacked by many different kinds of insect pests and have to be controlled under a variety of conditions. Effective controls for only some of them are available. It is important that there be no curtailment of these investigations. Some of the pests of greenhouse and ornamental plants now receiving special attention are: (1) The cyclamen and broad mites--insects extremely difficult to control which according to a conservative estimate cause annual losses to greenhouse interests

approximating one million dollars; (2) the gladiolus thrips-- a limiting factor to the successful production of this favorite garden flower; (3) Mexican mealybug--a pest attacking a large variety of plants, recently established in commercial greenhouses which resists the treatments ordinarily used for the control of greenhouse insects; (4) narcissus bulb flies--effective methods for disinfecting narcissus bulbs have been developed but present methods of controlling the pest in the field are not fully effective; (5) bulb mites--there are a number of mites which seriously injure narcissus bulbs and flowers for which satisfactory control measures are not available and additional facts are needed before all varieties of bulbs can be disinfected to eliminate mites; (6) insect vectors of important mosaic diseases of rose and narcissus--it seems likely that these diseases are transmitted by insects which may be fairly easily controlled. This work is carried on in cooperation with the Bureau of Plant Industry.

The most important pest problems confronting the producers of mushrooms are maggots and mites. The control measures now available to the commercial producer are not fully effective. Conditions that must be maintained in the house for the satisfactory growth of mushrooms make it difficult to fumigate. Mite control is especially difficult because the fumigants ordinarily used do not penetrate the compost and reach the mite without injury to the mushroom. A sulphur burner has recently been devised which materially increases the opportunity of using sulphur in fumigating houses. Progress has also been made in the development of light traps. Further work, however, is necessary to make these results available to the producer.

EMERGENCY FUNDS

Direct Allotments

Projects	Obligated, 1934
Public Works Allotments (National Industrial Recovery Act):	
Construction of temporary insectary at Richmond Va., in connection with work on insects affecting stored tobacco.....	$194
Civil Works Projects:	
Sweet-potato weevil control.....	850

(m) CEREAL AND FORAGE INSECTS

Appropriation, 1932.	$ 603,493
Appropriation, 1933.	552,854
Appropriation, 1934.	478,140 (a)

Appropriation, 1935.	326,335 (b)
Budget Estimate, 1936.	339,729
Increase, Budget 1936, compared with Appropriation, 1935.	13,394 (c)

(a) Includes $26,500 transferred from "Household and Stored Products Insects".

(b) Includes $13,634 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) $4,633 transferred from Bureau of Animal Industry; and (2) $9,001 from fund authorized by Sec. 21 (e) of Act of March 28, 1934.

(c) Increase of $13,394 compared with 1935 appropriation consists of:

5% salary restoration, 1936 (to 100%).....	+ $13,634
Reduction: Continuation of 1935 impoundment..	- 240
	+ 13,394

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease: 5% Salary Restoration	Increase or decrease: Working Funds
Obligated:					
Cereal and Forage Insects.....	$211,523	$216,087	$225,114	$9,027	---
Corn-borer research	129,423	79,204	82,468	3,264	---
Sugar-cane and rice insects.....	28,948	30,804	32,147	1,343	---
Total obligations	369,894	326,095	339,729	13,634(1)	---
Unobligated:					
Salary reduction impoundments.....	18,585	---	---	---	---
Other legislative impoundments.....	5,497	240	---	---	- 240(2)
Other amounts unobligated.....	84,164	---	---	---	---
Total appropriation	478,140	326,335	339,729	+ 13,394	

The increase of $13,394 for 1936 includes:

(1) An increase of $13,634 for 5% salary restoration, 1936 (to 100%).

(2) A reduction of $240, continuing 1935 impoundments.

WORK DONE UNDER THIS APPROPRIATION

General. Investigations under this item are concerned with the development of effective and economical means of controlling insects affecting cereal and forage crops including sugar cane and rice. The production of cereal and forage crops is the most important agricultural activity over a large part of the United States. The insects attacking these crops annually cause immense losses and in some areas crops may be completely destroyed by these pests. Investigations on the European corn borer are also included under this item.

Cereal and Forage Insects. The activities under this project are concerned with investigations to develop effective and economical means of controlling insects affecting corn, small grains (except rice), and forage crops. There are hundreds of kinds of insects which attack these crops. Some of these are injurious to both cereal and forage crops while certain others restrict their activities to certain types of crops. The work under way falls in 5 rather important groups each of which includes numerous activities.

The insect pests of corn, grasses and small grain include such important enemies as the Hessian fly, the wheat midge, the chinch bug, the corn earworm, various joint worms, range caterpillars, straw worms, etc. The Hessian fly is probably one of the most important of these and although reasonable control can be effected by carefully following recommendations as to time of planting, this pest causes considerable losses even in years when it does not occur in outbreak numbers. Certain varieties of wheat have been found which are highly resistant to its attack and cooperative studies are under way to combine the resistant characters with desirable agronomic characters. The corn earworm is the most destructive insect enemy of corn and no effective control is available. Investigations to develop such control are under way and their continuation may be the means of aiding farmers in combating a pest which causes larger losses than perhaps any other single insect.

Forage crops are attacked by a wide variety of insect pests including the alfalfa weevil, alfalfa aphid, clover seed chalcid, plant lice etc. The alfalfa weevil is an introduced pest which is established in a number of the inter-mountain states. Effective controls are available for certain parts of the area but further information is needed to make them fully applicable to all regions. One parasite has been established which is effective in certain sections. An effort is being made to introduce other parasites which will be adapted to regions recently infested. The Alfalfa aphid frequently occurs in outbreak numbers causing severe losses in many localities. No effective control which can be economically applied has been developed. Isolated plants of a number of varieties have been found to be unfavorable to this pest, and investigations are under way to develop

resistant strains so that the losses caused by the aphid may be reduced to a minimum.

A number of insects attack sunflowers and artichokes, the most important of which are the seed weevils and the budworm. Sunflowers and artichokes mature in a short time and are particularly important in sections where corn has been destroyed by unfavorable conditions, although they are grown as regular crops in parts of the Mississippi Valley and parts of the southwest. Studies to determine controls for these pests by agricultural methods are under way at one laboratory and should be continued.

Many insects, such as grasshoppers, white grubs, wire worms and cut worms are general feeders on both cereal and forage crops. The heavy infestation of grasshoppers which occurred over large areas of the United States during recent years emphasizes the importance of these pests and the need for continuing investigations to determine effective methods of control and to secure information regarding outbreaks so that they can be stamped out in their incipiency. White grubs cannot be controlled by any direct treatment now known. It is very important to continue investigations to devise means of controlling these pests which cause extensive losses over large areas.

The investigations on insects damaging cereal and forage crops in the field are carried on at appropriate headquarters in the following states: Indiana, Kansas, Oregon, Missouri, California, Arizona, Utah, Montana, Pennsylvania, Massachusetts and Virginia.

The damage insects do to stored cereal products is very great. The control of these pests has been materially complicated in recent years when large quantities of infested flour have been turned back to the mills for reconditioning. The laboratory at Manhattan, Kansas, is carrying on investigations, in cooperation with milling and storage concerns, to develop effective methods of controlling insects in terminal grain elevators, farmers' bins, etc. by the use of fumigants or other means and to determine the relation between storage conditions and field infestations.

Corn Borer Research. Climatic factors over much of the area infested by the European corn borer have been unfavorable for the development of the borer during the last three years. Notwithstanding this, the borer has spread into new areas, particularly in the east, and has caused severe injury to sweet corn producers in the New England area. The work on this pest has been materially reduced and it is essential that the activities now under way be continued. Special attention is being devoted to the development of controls of this pest on sweet corn by the use of insecticides, the development of varieties resistant to the borer, the introduction and colonization of parasites, the perfection of mechanical measures and cultural practices for control and surveys to determine general distribution and abundance. Investigations are headquartered at Toledo, Ohio, New Haven, Connecticut, and Melrose Highlands, Massachusetts.

Sugar Cane and Rice Insects. Work on sugar cane and rice insects is headquartered in Louisiana and carried on in cooperation with other agencies of the Department. Certain diseases of cane which are limiting factors in its production are transmitted by insects. A new insect vector of mosaic disease has recently been discovered. It is important that the

studies be continued to determine more accurately the part it plays in the transmission of the disease and to develop methods for its control. The sugar cane borer is the most important insect enemy of cane. Investigators in other countries have concluded it can be effectively controlled by the use of an egg parasite. Experiments are under way to determine the practicability of using this parasite in the United States. These tests and the studies to determine the status of recently imported parasites should be continued. It has recently been determined that insects are the cause of the condition known as "pecky" rice which is responsible for losses which may exceed $700,000 per annum. Investigations to determine methods of controlling these insects to prevent the damage which becomes evident when the harvested grain is placed in storage are under way and should be continued.

EMERGENCY FUNDS

Direct Allotments

Project	Obligated, 1934
Public Works Allotments (National Industrial Recovery Act):	
Construction of temporary insectary at Lafayette, Indiana.....	$338

(n) EUROPEAN CORN BORER CONTROL

Appropriation, 1932.	$950,000
Appropriation, 1933.	295,000
Appropriation, 1934.	40,000
Appropriation, 1935.	31,675 (a)
Budget Estimate, 1936.	32,939
Increase, Budget 1936, compared with Appropriation, 1935.	+ 1,264 (b)

(a) Includes $1,264 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) $648 transferred from Bureau of Animal Industry; and (2) $616 from fund authorized by Sec. 21(e) of Act of March 28, 1934.

(b) Increase of $1,264 compared with 1935 appropriation consists of 5% salary restoration, 1936 (to 100%)

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease: 5% Salary Restoration	Increase or decrease: Working Funds
Obligated:					
European corn-borer control.....	$29,182	$31,675	$32,939	(1) $1,264	---
Unobligated:					
Salary reduction impoundments.....	1,389	---	---	---	---
Other amounts unobligated.....	9,429	---	---	---	---
Total appropriation.....	40,000	31,675	32,939	+ 1,264	

(1) The increase of $1,264 is for 5% salary restoration, 1936 (to 100%).

WORK DONE UNDER THIS APPROPRIATION

The work done under this appropriation is for the continuance of the certification of products originating in the infested areas to meet the requirements of State quarantine on account of the European corn borer. Because of reduced funds the scouting work to enable the Department to keep advised as to the spread and status of the European corn borer, to serve as a basis for information to the States desiring to protect themselves from this insect by means of individual quarantine action was discontinued after the fiscal year 1933. The corn borer work is now necessarily confined to the certification of products going to States maintaining corn borer quarantines and which do not recognize State certification. There is no reason to acticipate fewer demands for certification thus necessitating the amount of the subappropriation in question for the fiscal year 1936.

(o) BARBERRY ERADICATION

	Regular	P.W.A.	Total
Appropriation, 1932.	$377,140	---	377,140
Appropriation, 1933.	196,400	---	196,400
Appropriation, 1934. . . . . .(a)	180,722	348,223	528,945
Appropriation, 1935.	---	401,777	401,777
Budget Estimate, 1936.	200,000	---	200,000
Net change, Budget 1936, compared with Appropriation, 1935. . . . . .(b)	+200,000	-401,777	-201,777

(a) Transferred from Bureau of Plant Industry.

(b) The increase of $200,000 is apparent only, as this work was financed during 1935 from an allotment of $401,777 from the Federal Emergency Administration of Public Works. The Budget for 1936, therefore, contemplates an actual decrease of $201,777 in working funds.

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease: 5% Salary Restoration	Increase or decrease: Working Funds
Obligated:					
Barberry eradication:					
Regular Funds.....	$126,468	---	$200,000	---	+$200,000(1)
P.W.A. Funds.....	348,223	$401,777	---	---	- 400,777(2)
Unobligated:					
Regular Funds:					
Salary Reduction impoundments.....	5,236	---	---	---	---
Other amounts unobligated.....	49,018	---	---	---	---
Total, Regular appropriation.....	180,722	---	200,000	---	---
Total, P.W.A. funds...	348,223	401,777	---	---	---
Total, All Funds.....	528,945	401,777	200,000	- 201,777	

The decrease of $201,777 in total funds for 1936 includes:

(1) An increase of $200,000 in regular funds. This item was omitted from the appropriation act for the fiscal year 1935, activities during the year being conducted under a balance of $401,777 remaining unexpended from a $750,000 allotment of funds made by the Public Works Administration during the fiscal year 1934. The enlargement of the work of eradicating barberries, an alternate host of black stem rust, by the use during the seasons of 1933 and 1934 of emergency funds made it possible to remove approximately two times as many bushes as were removed in 1932 when the annual appropriation was $377,140. This enlarged program has been of great value to the cooperative work which

has been under way since 1918. It has, however, been impossible to remove all bushes and destroy the seeds. It is well known that seeds may lay dormant for a long period and that the removal of the parent bush produces conditions favorable for germination. These seedlings must be destroyed before they become mature enough to produce fruit. Material progress has been made and much benefit derived from the cooperative effort toward barberry eradication carried on since 1918 with the expenditure of more than six million dollars made available by Federal, state and local agencies. The continuation of this work is important and the funds provided by this estimate will be used to employ trained men to coordinate and direct cooperative efforts to control black stem rust.

(2) A decrease of $401,777 in Public Works Administration funds. This amount representing the unexpended balance of an original allotment of $750,000 made from Public Works Administration funds during the fiscal year 1934, will be exhausted during the fiscal year 1935. As indicated by note (1) it is planned to carry on barberry eradication work in 1936 under a reduced regular appropriation.

CHANGE IN LANGUAGE

The inclusion of the title and the language authorizing these appropriations is necessary to provide authorization for work on the eradication of barberry, which is carried on as a regular activity of the Department but which during the fiscal year 1935 was excluded from the regular appropriation acts, and the work financed by a special allotment from the Public Works Administration.

WORK DONE UNDER THIS APPROPRIZTION

Funds available under this appropriation provide for cooperation with states, individuals and other agencies in the eradication of the common barberry, the intermediate host of black stem rust fungus. The purpose of this work is to control black stem rust of wheat, oats, barley and rye and prevent the occurrence of epidemics of this disease. This work consists of locating and removing bushes of those species or varieties of barberry which serve as intermediate hosts of the fungus. These activities are carried on in cooperation with the states. Federal funds are used largely for the supervision and coordination of the work of state and local agencies who supply labor, inspectors and share in the expenses of scouting. Barberries may resprout from portions of roots left in the ground or be produced from seeds which have laid dormant on the ground for sometime. It is, therefore, essential that the areas be reinspected to insure that the plants have been eliminated.

Since 1918 more than 19,000,000 rust-susceptible barberry bushes have been destroyed in the states where cooperative work is carried on. Approximately 350,000 of these were destroyed in 1933. During the five year period 1916 to 1920, the average annual loss to wheat from stem rust, aside from its effect on quality, was estimated at more than 57,000,000 bushels, while for the five year period 1926 to 1930, after millions of barberry bushes had been destroyed, the average annual loss attributed to this disease was estimated at less than 10,000,000 bushels. The estimated loss for 1932 was 2,740,000 bushels, while the loss experienced during 1933 was reduced to a trace. During the three year period from 1931 to 1933, inclusive, the average loss was estimated at 2,800,000 bushels and much of this was in Durum wheats which

were severely injured by certain parasitic strains of rust that are very prevalent on and near barberry bushes. This steady reduction in damage from stem rust has taken place in spite of the fact that in some of the later years, weather conditions were extremely favorable for rapid spread of the disease. The stability of yield and quality of harvested small grains are becoming increasingly evident as the eradication of barberries continues.

EMERGENCY FUNDS

Direct Allotments

Projects	Obligated, 1934	Estimated obligations, 1935
Public Works Allotments (National Industrial Recovery Act):		
Prevention of black-stem rust of wheat, oats, barley, and rye; eradication of rust spreading barberry in wheat producing areas subject to infection:		
Colorado	$ 8,200	$ 10,000
Illinois	37,000	33,200
Indiana	14,975	11,600
Iowa	42,400	43,000
Michigan	40,100	33,600
Minnesota	38,400	20,500
Ohio	43,800	31,200
Wisconsin	68,100	64,300
North Dakota	11,950	12,200
South Dakota	6,080	9,500
Nebraska	14,997	13,000
Montana	4,854	5,200
Wyoming	3,225	6,300
Missouri	4,640	4,200
Dist. of Columbia	9,502	10,698
Various	---	93,279
Total	348,223	401,777

(p) COTTON INSECTS

Appropriation, 1932.	$298,820	
Appropriation, 1933.	200,000	
Appropriation, 1934.	175,000	
Appropriation, 1935.	141,662	(a)
Budget Estimate, 1936.	147,244	
Increase, Budget 1936, compared with Appropriation, 1935.	5,582	(b)

(a) Includes $5,662 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) $2,510 transferred from Bureau of Animal Industry; and (2) $3,152 from fund authorized by Sec. 21 (e) of Act of March 28, 1934.

(b) Increase of $5,582 compared with 1935 appropriation consists of:

5% salary restoration, 1936 (to 100%).....	+ $5,662
Reduction: Continuation of 1935 impoundment.....	- 80
	+ 5,582

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease: 5% Salary Restoration	Increase or decrease: Working Funds
Obligated:					
Cotton boll weevil....	$57,478	$52,392	$54,404	2,012	---
Miscellaneous cotton insects.....	35,613	50,000	52,125	2,125	---
Thurberia weevil.....	9,858	9,500	9,965	465	---
Pink bollworm.....	25,286	29,690	30,750	1,060	---
Total obligations....	128,235	141,582	147,244	5,662(1)	---
Unobligated:					
Salary reduction impoundments.....	7,027	---	---	---	---
Other legislative impoundments.....	5,653	80	---	---	- 80(2)
Other amounts unobligated.....	34,085	---	---	---	---
Total appropriation....	175,000	141,662	147,244	+5,582	

The increase of $5,582 for 1936 includes:

(1) An increase of $5,662 for 5% salary restoration, 1936 (to 100%).

(2) A reduction of $80, continuing 1935 impoundment.

WORK DONE UNDER THIS APPROPRIATION

General. The funds provided under this appropriation are used for investigations on insects attacking cotton plants and crude cotton products and for the development or improvement of direct or indirect methods of control. Comparatively few states are engaged in the investigations of insects attacking cotton. Practically all the investigations conducted in the United States for the control of insect pests of this important crop are, therefore, provided for under this item.

At the request of the Bureau a group of prominent state entomologists recently reviewed the entire program of investigations on insects attacking cotton. After a critical study they fully endorsed the work now under way and in their report recommended that more than a dozen additional lines of study be undertaken, thus emphasizing the necessity of at least continuing the work under way.

Cotton Boll Weevil. The funds allotted to this project provide for studies on the boll weevil, the most important cotton pest in the south and the development and improvement of control measures. The scope of studies under way cover a wide field. Some of the more important lines of work under way are:

Field tests on new and promising insecticides or combinations of insecticides. Under certain conditions the use of calcium arsenate to control the cotton boll weevil creates a situation favorable to the development of native cotton pests such as the cotton aphid. Studies under way provide for modifying applications or adding other insecticides to each application so as to eliminate this difficulty. The details for the control of the boll weevil differ in various parts of the cotton belt and accurate information is not available for certain sections as to the most effective time to apply the standard calcium arsenate method to secure effective control. These field tests are conducted in South Carolina, Mississippi and Louisiana.

New or promising insecticides are being tested in cages to determine their value in comparison with the standard calcium arsenate and also to determine the effect that they may have on the cotton plant. These cage tests are used as the basis for field tests.

In certain areas particularly those along the Atlantic Coastal Plain calcium arsenate and other arsenicals appear to have a deleterious effect on certain types of soil. Studies are under way to determine the effect insecticides used for control of the boll weevil have on cotton, forage or truck crops that may later be planted in these soils. These studies also include tests to determine whether it is practical to reduce the amount of calcium arsenate in the earlier applications or whether it is practical to eliminate them and use the molasses calcium arsenate mixtures or substitute sulphur or other non-arsenicals.

Certain native parasites are known to attack the boll weevil and studies are under way in cooperation with various states to determine the seasonal and geographical distribution and abundance of these parasites and to ascertain the relation they may have to other insects and environmental factors. These studies are for the purpose of determining whether it would be practical to utilize these natural agencies in control.

Preliminary observations suggest that all types of cotton plants are not equally attractive to the boll weevil. Studies are under way to determine the characters of the cotton plant which are resistant to the boll weevil. This work is carried on in cooperation with the Bureau of Plant Industry at five experiment stations in Mississippi and two in Louisiana, with main headquarters at Stoneville, Mississippi.

Miscellaneous Cotton Insects. Work under this project includes studies on the distribution, life history and habits of many insect pests which occur rather widely through the cotton belt and the development of control measures for those which are particularly injurious.

The cotton flea hopper and closely allied insects cause the cotton plant to shed squares. They are very important pests and often cause extensive damage over wide areas. Investigations to determine methods of controlling these pests by the use of insecticides and by cultural practices are under way. These studies are centered at Port Lavaca, Texas.

The cotton boll worm causes considerable damage to cotton, sometimes defoliating the plants over very wide areas. Studies to determine the relation of this pest to environmental factors, the effectiveness of insecticides or repellents to the moth and the possible value of natural enemies are under way. Much of this work is carried on from the laboratory at College Station, Texas, and is done in cooperation with the Texas Agricultural Experiment Station.

The cotton root aphid is a pest of considerable importance, in the eastern part of the cotton belt, particularly along the Atlantic Coastal Plain. Studies for its control are being carried on at Florence in cooperation with the South Carolina Experiment Station.

Preliminary investigations indicate that certain cotton diseases may be disseminated by insects which occur commonly in cotton fields. Studies to determine the part such insects may play in spreading these diseases are being carried on in cooperation with the Texas Agricultural Experiment Station.

Certain true bugs cause material losses to cotton in regions where it is produced under irrigation. Studies to determine the relation of these bugs to their native host plants, and practicability of controlling the insects by the use of insecticides or cultural means are under way. Much of this work is being carried on in Arizona, with field headquarters at Tucson.

Some of the native insect pests of cotton, such as the red spider, cotton stainers, the leaf perforator, crickets and flea beetles occur in outbreak numbers periodically and cause important losses over considerable areas. Effective means of controlling many of these are not known. Studies to determine the life history and habits of these pests and how they can be

controlled are under way in the various field laboratories, particularly those at Tallulah, Louisiana and Florence, South Carolina.

Thurberia Weevil. This project provides for investigations of the life history habits and development of control measures for the Thurberia weevil, the western form of the cotton boll weevil which is confined to the limited portions of the cotton growing area of southern Arizona and parts of Mexico. This insect is a dry land form of the cotton boll Weevil and has as its native host wild Thurberia cotton, which is generally distributed throughout the mountain regions of the southwest. This weevil has adapted itself to cotton and is a potential enemy to cotton production in the arid regions. Its habits differ from those of the boll weevil and in limited areas around Tucson, it has demonstrated that it can do material damage to cultivated cotton. Present studies are concerned with its distribution, its adaption to cultivated cotton and to the development of control measures by the use of insecticides.

Pink Bollworm. The activities under this project are concerned with investigations on the pink bollworm to develop needed facts regarding its life history and habits and to improve and develop new control measures which may be used in combating the insect in the limited sections of the United States where it has become established. These investigations will also serve as an insurance by providing additional information regarding means of controlling or eradicating this pest should it become established in new areas. The work is carried on in cooperation with the Texas Agricultural Experiment Station and the Mexican Department of Agriculture. Headquarters are maintained at Presidio, Texas and Tlahualilo, Durango, Mexico.

Breeding and colonization of two introduced parasites which are known to attack the pink bollworm in Egypt. Incidental studies on native parasites are also carried on as part of this activity. Colonies of these introduced parasites have been liberated in the Big Bend area of Texas and parts of the infested area in Mexico.

The use of insecticides is also being studied in the laboratory and in the field to determine the toxicity of various materials and the possibility of applying them under field conditions to reduce or control this pest.

Studies on control by cultural means are also under way in cooperation with the Bureau of Agricultural Engineering. This work includes experiments to determine the effect of plowing, irrigation on the overwintering larvae and also experiments to develop machinery which can be used in cleaning the field of crop remnants.

EMERGENCY FUNDS

Direct Allotments

Projects	Obligated, 1934
Public Works Allotments (National Industrial Recovery Act):	
Construction of temporary insectary at Port Lavaca, Texas, to be used for studies of the Cotton Flea Hopper.....	$596
Construction of temporary insectary at Tucson, Arizona, for investigation on the Thurberia Weevil.....	100
Total.....	696

(q) PINK BOLLWORM CONTROL

Appropriation, 1932.	$ 497,000	
Appropriation, 1933.	375,000	
Appropriation, 1934.	379,804	
Appropriation, 1935.	265,979	(a)
Budget Estimate, 1936.	276,839	
Increase, Budget 1936, compared with Appropriation, 1935.	10,860	(b)

(a) Includes $11,020 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) $4,794 transferred from Bureau of Animal Industry; and (2) $6,226 from fund authorized by Sec. 21(e) of Act of March 28, 1934.

(b) Increase of $10,860 compared with 1935 appropriation consists of:

5% salary restoration, 1936 (to 100%).....	+ $11,020
Reduction: Continuation of 1935 impoundment.....	- 160
	+ 10,860

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease 5% Salary Restoration	Increase or decrease Working Funds
Obligated:					
Pink bollworm control	$308,713	$265,819	$276,839	$11,020(1)	---
Unobligated					
Salary reduction impoundments	16,094	---	---	---	---
Other legislative impoundments	9,794	160	---	---	-160 (2)
Other amounts unobligated	45,203	---	---	---	---
Total appropriation	379,804	265,979	276,839	+ 10,860	

The increase of $10,860 for 1936 includes:

(1) An increase of $11,020 for 5% salary restoration, 1936 (to 100%).

(2) A reduction of $160, continuing 1935 impoundment.

WORK DONE UNDER THIS APPROPRIATION

General. The work under this item is contained in one project which includes activities such as eradication and control in Florida and Georgia, eradication and control in the eastern area of Texas, eradication and control in west Texas and New Mexico, laboratory, and gin trash inspection.

The pink bollworm of cotton finds its way into the United States from Mexico. Eradication of infestations have occurred in parts of Texas, Louisiana, and Arizona. Work is still going on in the States of Arizona, Florida, Georgia, New Mexico, and Texas. It is believed that complete extermination of the insect throughout the infested area is possible except for those areas which are adjacent to sources of infestation in Mexico.

Eradication and Control in Florida and Georgia. In southern Florida where a very heavy infestation has been found in wild cotton the program has consisted of removal of this wild cotton. At the outset that most accessible to the average resident or tourist was removed first gradually working back to more remote locations. Experience has shown that some of this cotton will sprout from portions of the roots which were not removed and it also comes from seed. This necessitates going over the ground again and probably for several times. Additional territory will be included in this season's work and it is believed that most of the wild cotton has been located. Pink bollworm is commonly found in this wild cotton. A very light infestation was found in cultivated cotton in northern Florida and a regulated area has been established there including six counties in order to provide certification for the movement of cotton products from that area.

Last fall the gin trash machines found a very light infestation in Georgia. A regulated area was established and included parts of three counties in order to provide for the certification of cotton products from that area. A part of this, that surrounding the known infested fields has, through the cooperation of the Agricultural Adjustment Administration been put in a cotton-free status for the current year and it is believed this will greatly expedite the eradication of the insect in this section.

Eradication and Control in the Western Area (West Texas and New Mexico.) This area includes the El Paso Valley in Texas and the State of New Mexico, parts of which are exposed to infestation by natural spread from cotton growing regions of Mexico. The infestation is lighter in this region but of such general distribution that it is not believed necessary to operate road stations. How ver, there is the work of issuing permits, supervision of sterilizing equipment and oil mills. Gin trash machines are operated in this area; also laboratory examination of cotton bolls. In the latter part of the cotton season last year a light infestation was found involving part or all of seven counties in western Texas and two counties in eastern New Mexico. The quarantine was extended to include this area in order to provide for certification of products from that area.

Eradication and Control in the Eastern Area of Texas. This area includes the heavily infested section in the vicinity of Presidio, Texas. Cotton heavily infested with the pink bollworm in Mexico is separated only by a little more than the width of the Rio Grande from growing cotton in the nited States, infestation being heavy on both sides. A general program of suppression and control is maintained in this area on the American side of the border. This includes field cleanup and quarantine enforcement with road stations to prevent the movement of products which might carry infestation out of the heavily infested area around Presidio. Gin trash inspection to determine density of infestation as well as distribution, and also laboratory inspection, are carried on in this area. Work here also includes supervision of oil mills and sterilization of cotton seed and fumigation of lint. On the Mexican side of the line agricultural officials and growers are watching the progress of the work across the river and good cooperation is being received, there being a rather general and concerted attempt to follow the cleanup procedure.

Laboratory. The operation of the quarantine depends, of course, upon an accurate knowledge of the distribution of the pest. The fact that the pink bollworm does or does not exist in this country outside the regulated area must be determined for obvious reasons. The cheapest and most efficient way to do this would be through the use of gin trash machines throughout the cotton growing areas. Since this cannot be accomplished under the appropriation the alternative is to provide a substitute for gin trash inspection through the collection of bolls from all areas of the main cotton belt. These are kept in preservatives and inspected in laboratories during the off season when field work permits. Such laboratories are maintained at Miami, Florida; San Antonio, Alpine, and El Paso, Texas.

Gin Trash Inspection Outside Regulated Area. The development of machines capable of segregating gin trash leaving the larvae of the pink bollworm readily exposed to view in an almost negligible quantity of trash has brought this type of inspection to a point which justifies its consideration as an item altogether separate from that of scouting, although it is an

essential part of the scouting work. These machines have been improved from year to year and are now mounted on trucks which enables them to be moved readily from one location to another. Since it is not necessary to tear down and set up the equipment, machines may be moved from gin to gin or locality to locality under their own power as circumstances may require and the efficiency of the work is greatly increased. The use of these machines at gins in and out of the regulated area furnishes a more comprehensive knowledge of the pink bollworm conditions throughout the entire cotton belt. The gin trash machine furnishes the most positive evidence with respect to the presence or absence of the pink bollworm in a given locality. Its use outside the regulated area exceeds in value large scale field inspections which would require a number of men throughout the season. It is used primarily in those areas where the possibility of spread seems greatest because of proximity to infested areas or where heavy travel from infested areas passes through cotton-growing regions. It is this inspection on which greatest reliance is placed for the finding of infestations of pink bollworm before they have time to become thoroughly established and spread over considerable areas. This work should not be decreased in volume.

Gin Trash Inspection Inside Regulated Area. There is need for careful and thorough inspection within the regulated areas to determine conditions of infestation. The regulations enforced differ as between lightly infested and heavily infested areas, and the determination as to this degree of infestation can best be made by gin trash machines. Their use cannot be replaced by any other form of inspection with equal efficiency and economy. The cost of producers of compliance with the regulations in the sterilization of seed and lint is directly affected by the information obtained from the use of these machines within the regulated area.

Field Inspection Outside Regulated Area. The laboratory inspection and gin trash inspection are supplemented by a third method of determining the presence or absence of the pink bollworm. This third method consists of field inspection. It is used in areas outside the regulated area where some reason exists for suspecting possibility of infestation and where it is important to discover this infestation at the earliest possible moment and where the infestation must be traced to definite fields of growing cotton. Such instances occurred last year in Georgia and in Western Texas and Eastern New Mexico where new infestations were found in the field after being first discovered at the gins by the gin trash machine.

(r) THURBERIA WEEVIL CONTROL

Appropriation, 1932.	$ 34,500	
Appropriation, 1933.	10,250	
Appropriation, 1934.	3,275	
Appropriation, 1935.	2,696	(a)
Budget Estimate, 1936.	2,808	
Increase, Budget 1936, compared with Appropriation, 1935.	112	(b)

(a) Includes $112 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) $59 transferred from Bureau of Animal Industry; and (2) $53 from fund authorized by Sec. 21(e) of Act of March 28, 1934.

(b) Increase of $112 compared with 1935 appropriation consists of 5% salary restoration, 1936 (to 100%)

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease: 5% Salary Restoration	Increase or decrease: Working Funds
Obligated:					
Thurberia weevil control.....	$2,257	$2,696	$2,808	112 (1)	---
Unobligated:					
Salary reduction impoundments.....	112	---	---	---	---
Other amounts unobligated.....	906	---	---	---	---
Total appropriation.....	3,275	2,696	2,808	+112	

(1) The increase of $112 is for 5% salary restoration, 1936 (to 100%).

WORK DONE UNDER THIS APPROPRIATION

The work done under this subappropriation provides for the administration and enforcement of the Thurberia weevil quarantine, which involves the supervision of movement of cotton and cotton products and in some instances for their treatment. The work involves movement of cotton, cottonseed and other articles likely to carry the Thurberia weevil into uninfested regions. The Thurberia weevil is a native variety of the Mexican boll weevil and occurs in limited areas in the State of Arizona. Under natural conditions this native insect lives on live Thurberia cotton. With the production of cultivated cotton in this area, it has become attracted to this crop. The weevil has demonstrated capacity to breed in cultivated cotton and because of its ability to live under arid conditions is aserious menace to cotton grown under semi-arid conditions.

(s) BEE CULTURE

Appropriation, 1932.	$ 73,920
Appropriation, 1933.	70,320
Appropriation, 1934.	65,000
Appropriation, 1935.	47,835 (a)
Budget Estimate, 1936.	50,000
Increase, Budget 1936, compared with Appropriation, 1935.	2,165 (b)

(a) Includes $2,165 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) $942 transferred from Bureau of Animal Industry; and (2) $1,223 from fund authorized by Sec. 21(e) of Act of March 28, 1934.

(b) Increase of $2,165 compared with 1935 appropriation consists of: 5% salary restoration, 1936 (to 100%)

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease: 5% Salary Restoration	Increase or decrease: Working Funds
Obligated:					
Bee Culture.....	$48,931	$47,835	$50,000	$2,165(1)	---
Unobligated:					
Salary reduction impoundments.....	2,658	---	---	---	---
Other amounts unobligated.....	13,411	---	---	---	---
Total appropriation.	65,000	47,835	50,000	+ 2,165	

(1) The increase of $2,165 is for 5% salary restoration, 1936 (to 100%).

WORK DONE UNDER THIS APPROPRIATION

Work under this item is concerned with the investigations on the habits and management of bees to make the production of honey and wax more profitable and to facilitate pollination of vegetable, fruit and forage crops by the use of honeybees. This is the only appropriation made by the Federal Government which provides direct assistance or aid to the beekeeping interests of the United States, the annual value of which can be conservatively estimated at $100,000,000. The fact that the state agencies look to the Department to supply them with necessary information regarding the management of bees, control of their diseases, satisfactory and effective methods of handling them in the pollination of plants and in the production of honey and wax emphasizes the importance of continuing the work carried on under this item. This work is now headquartered at Somerset, Maryland but the

headquarters will be moved to Beltsville, Maryland within the near future. Regional problems are studied at laboratories maintained at Laramie, Wyoming, Baton Rouge, Louisiana and Davis, California.

Diseases of bees cause very material losses throughout the United States. Samples from diseased colonies are forwarded to the Bureau for diagnosis and recommendation for methods of control. This service is essential to the beekeeping interests of the United States. Another service which is conducted for the protection of the bee industry is the examination of living honeybees which may be imported under the Act regulating such importations. A new bee disease has recently been discovered in several southeastern states and investigations are under way to determine methods of control.

Studies are under way to determine the regions which produce the most satisfactory honey flora and the time when honey plants are available for honey production. In California such studies are directed toward plants available at higher altitudes where colonies may be sent for pasturing during the summer or at times when such poisonous plants, as the buckeye, are in flower.

Studies to develop improved strains of bees are under way. These include work to develop strains, with longer tongues, which can be effectively used in the fertilization of such plants as clover; strains which are more resistant to weather conditions; strains which have resistance to diseases; strains which have larger honey carrying capacity; etc.

The shipment of bees in one or two pound packages with queens is a new and rather rapidly developing industry. It is of benefit not only to the beekeepers in the north and south but also to orchardists needing bees for pollination purposes. Considerable losses occur in the shipment of bees and there has been constant litigation between the shippers and the express companies. Studies to determine satisfactory methods of shipping are under way.

Information regarding the value of the honeybee and its products or the best markets for the products is not readily available. Studies to secure necessary information regarding the economic aspects of the beekeeping industry are carried on in cooperation with the Bureau of Agricultural Economics and the economic divisions of experiment stations and state colleges. Particular attention is being devoted to this subject at the present time in California and Oregon.

(t) HOUSEHOLD AND STORED PRODUCTS INSECTS (a)

Appropriation, 1932.	$ 136,920
Appropriation, 1933.	147,320
Appropriation, 1934.	130,000
Appropriation, 1935.	(a)
Budget Estimate, 1936.	(a)

(a) The activities carried under this appropriation in 1934 have been transferred to the appropriation items concerned with the control of insects which attack the crops that produce the products, as follows:

Fruit Insects.....	$ 14,300
Truck Crop and Garden Insects.....	24,100
Forest and Shade Tree Insects.....	4,500
Cereal and Forage Insects.....	26,500
Insects Affecting Man and Animals.....	18,300
Estimated Savings and Unobligated Balances..	42,300
Total.....	$130,000

(u) INSECTS AFFECTING MAN AND ANIMALS

Appropriation, 1932.	$ 193,827
Appropriation, 1933.	169,294
Appropriation, 1934.	148,300 (a)
Appropriation, 1935.	114,874 (b)
Budget Estimate, 1936.	120,148
Increase, Budget 1936, compared with Appropriation, 1935.	5,274 (c)

(a) Includes $18,300 transferred from "Household and Stored Products Insects".

(b) Includes $5,274 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) $2,262 transferred from Bureau of Animal Industry; and (2) $3,012 from fund authorized by Sec. 21(e) of Act of March 28, 1934.

(c) Increase of $5,274 compared with 1935 appropriation consists of:

5% salary restoration, 1936 (to 100%)	+ $ 5,274
Increase in working funds available for obligation:.....	+ 80
Reduction: Offset of 1935 impoundment.....	- 80
	+ 5,274

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease 5% Salary Restoration	Increase or decrease Working Funds
Obligated:					
Insects affecting man	$ 42,438	$42,129	$44,123	$ 1,994	---
Household insects....	17,994	13,810	14,475	665	---
Insects affecting animals.....	54,227	55,990	58,550	2,480	+ 80 (2)
Insects affecting poultry and birds...	2,734	2,865	3,000	135	---
Total, obligations...	117,393	114,794	120,148	5,274(1)	+ 80
Unobligated:					
Salary reduction impoundments.....	5,239	---	---	---	---
Other legislative impoundments.....	786	80	---	---	- 80 (3)
Other amounts unobligated.....	24,882	---	---	---	---
Total appropriation...	148,300	114,874	120,148	+ 5,274	

The increase of $5,274 for 1936 includes:

(1) An increase of $5,274 for 5% salary restoration, 1936 (to 100%).

(2) An increase of $80 in the project "Insects Affecting Animals," by release of funds impounded in 1935.

(3) A reduction of $80, offsetting 1935 impoundment.

WORK DONE UNDER THIS APPROPRIATION

General. The activities under this item comprise investigations on insect pests attacking man or injuring him by carrying diseases, including those insect pests which annoy man in his habitation or destroy household supplies, fabrics, etc. It also provides for investigations on insect pests of farm and range animals, poultry, birds, wild birds and animals and the development of methods for their control or eradication. Activities are carried on independently or in cooperation with the Public Health Service, Bureau of Animal Industry and Biological Survey of the Department of Agriculture. The Bureau of Entomology and Plant Quarantine is, however, responsible for the investigations on insects.

Insects Affecting Man. The work under this project is concerned with investigations on insects which annoy man by direct attack or injure him by carrying diseases. Only a few of the more pressing problems are now being studied.

Mosquitoes as a class constitute the greatest insect pest known to man. They are responsible for carrying such dreaded diseases as yellow fever, malaria fever, dengue fever, etc. There are many different kinds of mosquitoes and no one control measure is equally effective for all kinds. The habits of some of the commoner forms are fairly well known and means of control have been developed. The habits of many kinds are known only in a general way and effective controls are not available. Even with the commoner forms methods of control depend on various local conditions. The planning for control campaigns requires technical assistance and at present the requests for advice can only partially be met. Field investigations are under way in Florida, Georgia and Oregon and it is essential that they be continued.

Sand flies do not carry diseases. They are, however, of prime importance to man in certain sections of the country, particularly along the southeast seaboard. Investigations recently conducted in Georgia and South Carolina have developed facts which make it possible to suggest control measures that will materially reduce the numbers of certain species. The habits of only a comparatively few species of sand flies are known and for some of them no effective control measures are now available.

The larvae of certain blow flies are used by surgeons to clean out and heal certain types of wounds, particularly bone lesions. In this work it is essential that they have available a constant supply of sterile maggots. The development of safe and economical methods of rearing and transplanting these maggots is being investigated in laboratories in Washington, D. C.

Household Insects. The activities falling under this project are concerned with insect pests in dwellings, hotels, etc., those annoying householders, and those destroying household supplies, drugs, fabrics, etc. There are many kinds of insects which annoy man or destroy his household possessions. The habits of these differ greatly. The habits of the same species may even differ under the different conditions of the artificial environment. The development of control measures is complicated because of the wide variety of conditions under which the pests occur. Special attention is now being given to the development of more effective methods of control by fumigation, the use of safe fumigants and the determination of conditions under which various fumigant materials may be used. These studies also involve determining the effect proposed controls may have on the products in storage, households, stores, etc.

Insects Affecting Animals. The work under this project is concerned with the development of methods for the control of insects injurious to horses, cattle, sheep, goats, swine, and other domestic animals, as well as game animals.

Screw worms are pests of cattle, sheep, goats and various kinds of animals causing immense losses and particularly under range conditions. The studies now under way are, for the most part, carried on at field laboratories in the State of Texas and directed toward the development of controls under conditions occurring in the range country of the southwest. These pests have occurred in other areas in outbreak numbers during the last few years and further studies in this field are essential.

The larvae of certain flies, commonly known as cattle grubs, not only greatly injure hides but materially interfere with the effective management

of dairy and range cattle. The annual losses from these insects are estimated as high as $50,000,000. Studies of methods for controlling these pests are under way at Ames, Iowa. While substantial progress has been made, further experimentation is necessary.

The larvae of certain flies commonly called horse bots cause material injury to horses and related animals and also greatly reduce their efficiency. These losses are much more serious than previously supposed. Recent investigations in Iowa have developed new facts regarding the life history of these pests which will apparently have important relation to control operations. More complete information on the habits of these pests and methods of preventing infestation are particularly needed.

The sheep head bot materially lowers the vitality of the infested animal and in many cases causes its death. Goat lice do a great amount of injury to the hair, particularly mohair, and also reduce the vitality of the animals. The losses caused by these pests to sheep and goat raisers are great and there is insistent demand for effective control measures. Investigations are being conducted at field laboratories in Texas.

In 1931 the factory value of fly spray was over $9,000,000 according to an estimate of the Bureau of Census. The production of these sprays has increased greatly since that time. Many of those now used on farms to protect livestock, particularly dairy cattle, are valueless and even detrimental to cattle and the dairy and other food products. Investigations are now under way at laboratories in Texas, Iowa and Maryland to develop a more effective and cheaper spray. If successful this work will be of material aid to the livestock and dairy industry, and besides controlling flies will tend to reduce the opportunity for disease.

A number of species of ticks are detrimental to animals. Wounds caused by some ticks, such as the common ear tick, to cattle provide entrance places for other pests such as screw worms. Information on the distribution and habits of these species are not well known and no satisfactory control measures are available for several important species.

Insects Affecting Poultry and Birds. The work done under this project deals with investigations on insect pests and mites which attack poultry and birds for the purpose of developing means of controlling them. These pests levy a heavy toll on poultry owners in spite of methods of control already developed. The amount of these losses and their distribution over the entire country justify the effort to continue to develop control measures to supplement those now recommended. Studies now under way are headquartered in Washington, D. C., and at Takoma Park, Maryland.

EMERGENCY FUNDS

Direct Allotments

Projects	Obligated, 1934
Public Works Allotment (National Industrial Recovery Act):	
Construction of an insectary, garage and fence at Uvalde, Texas.....	$ 920
Construction of an insectary, storage sheds, and fences at Sonora, Texas.....	1,100
Construction of insect cages at Savannah, Ga..	99
Construction of insect cages at Menard, Texas.	198
Construction of chicken enclosures at Takoma Park, Md.	50
Total	2,367
Civil Works Projects;	
Control of pest mosquitoes.....	56,250
Control of ticks carrying human diseases.....	1,675
Total	57,925

(v) INSECT PEST SURVEY AND IDENTIFICATION

Appropriation, 1932.	$ 197,930	
Appropriation, 1933.	177,955	
Appropriation, 1934.	162,000	(a)
Appropriation, 1935.	128,207	(b)
Budget Estimate, 1936.	134,798	
Increase, Budget 1936, compared with Appropriation, 1935.	6,591	(c)

(a) Excludes $28,000 transferred to "Control Investigations".

(b) Includes $6,591 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) $2,906 transferred from Bureau of Animal Industry; and (2) $3,685 from fund authorized by Sec. 21(e) of Act of March 28, 1934.

(c) Increase of $6,591 compared with 1935 appropriation consists of 5% salary restoration, 1936 (to 100%)

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease: 5% Salary Restoration	Increase or decrease: Working Funds
Obligated:					
Identification and classification of insects	$114,771	$119,126	$125,279	$6,153	---
Insect pest survey.....	9,210	9,081	9,519	438	---
Public relations.....	7,614	---	---	---	---
Total obligations.....	131,595	128,207	134,798	6,591(1)	---
Unobligated:					
Salary reduction impoundments.....	9,608	---	---	---	---
Other legislative impoundments.....	5,056	---	---	---	---
Other amounts unobligated.....	15,741	---	---	---	---
Total appropriation.....	162,000	128,207	134,798	+6,591	

(1) The increase of $6,591 is for 5% salary restoration, 1936 (to 100%).

WORK DONE UNDER THIS APPROPRIATION

General.- The work carried on under this item is essential to the various activities of the Bureau and involves the identification of specimens and the securing and recording of facts regarding the distribution and abundance of economic insect pests.

Identification and Classification of Insects.-The work under this project is of a continuing and service nature of vital importance to economic entomology. It includes the identification, classification and description of insects in both the adult and immature stages. Accurate and authoritative information on the identity and relationships of insects is required in the daily work concerned with research on insects, with control activities and with the enforcement of plant and animal quarantines. Without this information it would be impossible to conduct many of these activities in an effective manner. The prompt recognition of the numerous insect pests is essential, and can only be done by specialists. The work done under this project plays an important part in the economic work on insect pests carried on by other governmental agencies, state agricultural colleges and experiment stations, universities, etc., in this country and elsewhere. The demand and need for accurate information regarding identity of insects are increasing. During the last year material submitted for determination increased more than 150%. In connection with these activities, investigations are also carried out on anatomy and structure of insects. The proper understanding of the characters by which the hundreds of thousands of kinds that may be distinguished is essential.

The coordination and direction of the work incident to the introduction, exchange, and distribution of natural enemies which may aid in the control of injurious insect pests are also carried on under this project.

Insect Pest Survey.-The activities under this project are concerned with: (1) Collecting, recording, analyzing and maintaining permanent records on insect abundance and damage; (2) the maintaining of records of the occurrence and distribution of insect pests in foreign countries, information necessary in connection with the enforcement of quarantines regulating the entry of plants and plant products; (3) the publication of a monthly bulletin on current insect conditions and an annual summary of the conditions which occur throughout the United States.

Information on insect conditions throughout the country is supplied through cooperative arrangements with entomologists of the Bureau and state entomological agencies. These cooperators furnish notes on the occurrence and relative abundance of insect pests in their respective regions. The assembling and redistribution of current information on insect conditions is of importance to the Bureau but is also useful to state workers in forewarning them of menacing insect conditions occurring in neighboring areas.

Public Relations.- The work carried on under this project was discontinued June 30, 1934 because of the reduction in funds. The allotted funds provided for the employment of extension specialists in entomology who cooperated with the office of Cooperative Extension Work of the Department of Agriculture and made available to state officials and others the results of recent investigations on methods of combatting insect pests.

(w) CONTROL INVESTIGATIONS

Appropriation, 1932.	$ 54,860
Appropriation, 1933.	43,867
Appropriation, 1934.	39,100 (a)
Appropriation, 1935.	42,628 (b)
Budget Estimate, 1936.	44,518
Increase, Budget 1936, compared with Appropriation, 1935.	1,890 (c)

(a) Includes $28,000 transferred from "Insect Pest Survey and Identification", and $11,100 transferred from "General Administrative Expenses".

(b) Includes $1,890 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) $822 transferred from Bureau of Animal Industry; and (2) $1,068 from fund authorized by Sec. 21(e) of Act of March 28, 1934.

(c) Increase of $1,890 compared with 1935 appropriation consists of: 5% salary restoration, 1936 (to 100%)

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease 5% Salary Restoration	Increase or decrease Working Funds
Obligated:					
Sterilization of plants and plant products....	$10,922	$12,230	$12,820	$ 590	---
Physiology and toxicology.....	27,528	30,398	31,698	1,300	---
Total obligations.....	38,450	42,628	44,518	1,890(1)	---
Unobligated.....	650	---	---	---	---
Total appropriation.....	39,100	42,628	44,518	+1,890	

(1) The increase of $1,890 is for 5% salary restoration, 1936 (to 100%).

WORK DONE UNDER THIS APPROPRIATION

General. The activities carried on under this appropriation are concerned with problems having an intimate relation to much of the research, control and quarantine enforcement work of the Bureau. In the effective solution of these problems it is necessary to cut across crop and dividional lines, but the work in such cases is closely coordinated with that done by other units.

Sterilization of Plants and Plant Products. The activities under this project are concerned principally with the commercial application of methods developed for the sterilization or disinfection of plants or plant products. It includes the coordination and standardization of methods of disinfection required by various plant quarantines. Special attention is now directed toward (1) perfecting and standardizing, under commercial conditions, methods of fumigating cotton lint, cotton seed and other by-products to meet the requirements of Federal quarantine on account of the pink bollworm and the Thurberia weevil; (2) the development of more effective equipment or methods for applying standard sprays used for the elimination of infestations of the gypsy moth that may be discovered in outlying points or in the barrier zone; and (3) directing the phases of work incident to the sterilization of grapes offered for import.

Physiology and Toxicology. This project provides for technical studies on the responses and actions of insects needed to discover and develop insecticides and materials which can be used as repellents and attractants in the control of insect pests. An important phase of the work is testing of new materials, developed as the result of chemical studies, to determine their usefulness as insecticides to control various types of insect pests. This testing work represents the initial entomological phases of the development of new chemicals for insect control and goes hand in hand with investigations on the chemistry of insecticides and fungicides. They are chiefly of a technical laboratory nature and concerned with materials which promise to be of value.

Materials which still show promise after these initial tests are further tested at field laboratories concerned with the control of insects for which the new material may be applicable. These technical studies are a necessary part of a research program and not only suggest materials or methods of control for particular crop pests but develop basic principles applicable to the work carried on in many of the other units.

(x) INSECTICIDE AND FUNGICIDE INVESTIGATIONS (a)

Appropriation, 1932.	$ 128,400	
Appropriation, 1933.	117,300	
Appropriation, 1934.	109,563	
Appropriation, 1935.	92,352	(b)
Budget Estimate, 1936.	154,984	
Increase, Budget 1936, compared with Appropriation, 1935.	62,632	(c)

(a) This item is transferred from the Bureau of Chemistry and Soils to provide for a more logical and effective grouping of the work of the Department.

(b) Includes $4,432 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) $1,928 transferred from Bureau of Animal Industry; and (2) $2,504 from fund authorized by Sec. 21(e) of Act of March 28, 1934.

(c) Increase of $62,632 compared with 1935 appropriation consists of:

5% salary restoration, 1936 (to 100%).....	+$4,432
Increase in working funds for 1936.....	+60,000
Reduction by transfer to Interior Department....	- 1,800
	+62,632

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease: 5% Salary Restoration	Increase or decrease: Working Funds
Obligated:					
Insecticide and fungicide investigations...	$94,209	$92,352	$154,984	$4,432(1)	+$58,200(2)
Unobligated:					
Salary reduction impoundments.....	3,758	---	---	---	---
Other amounts unobligated.....	11,596	---	---	---	---
Total appropriation.....	109,563	92,352	154,984	+62,632	

The increase of $62,632 for 1936 includes:

(1) An increase of $4,432 for 5% salary restoration, 1936 (to 100%).

(2) An increase of $58,200 in working funds, consisting of an increase of $60,000 to replace a P.W.A. allotment in 1935 for spray-residue investigations, and a decrease of $1,800 by transfer to Interior Department for cleaning service.

The increase of $60,000 is urgently needed to continue chemical investigations on the development of new insecticides which during the fiscal year 1935 were carried on with a special allotment from the Public Works Administration. The excessive quantity of injurious insecticidal residues on apples sprayed for the control of the codling moth constitute a health menace of great importance. The need for additional chemical work to develop substitutes for these injurious insecticides was so urgent that special funds were allotted for this purpose by the Public Works Administration. Some very interesting and valuable information has been obtained. The increase will provide for the continuation of these studies and will protect the results already secured from them and permit further investigations along promising lines on which preliminary information has been secured. Additional new combinations of organic and inorganic insecticidal materials will be prepared for testing. Effective wetters and spreaders for those materials which appear to be effective will be developed. The compatibility of these materials with other sprays used for the control of diseases will be investigated. The possible health risk of the promising new combinations will be determined by appropriate tests on warm blooded animals.

CHANGE IN LANGUAGE

The inclusion of this title and the words "For the investigation and development of methods of manufacturing insecticides and fungicides, and for investigating chemical problems relating to the composition, action, and application of insecticides and fungicides" is recommended to provide under the Bureau of Entomology and Plant Quarantine authority for investigations described. These investigations have heretofore been provided for and carried on under the appropriations to the Bureau of Chemistry and Soils. In the interest of more effective organization, they are now directed by the Bureau of Entomology and Plant Quarantine on order of the Secretary of Agriculture.

WORK DONE UNDER THIS APPROPRIATION

The work carried on under this appropriation is designed to develop better and cheaper materials for destroying or repelling injurious insects and fungi. Particular attention is directed to those which are less hazardous to users and less poisonous to those eating sprayed or dusted fruits and vegetables. The improvement of existing insecticides and fungicides by detailed study of their physical and chemical properties is also under way. Investigations to originate and improve methods of analyzing them to devise cheaper methods of manufacture are activities which come under this project.

The determination of the most effective chemical means of removing harmful spray residues from fruits and vegetables that have been treated with compounds containing arsenic, lead, copper, fluorine or other insecticidal and fungicidal materials is also an important phase of the work.

There are many kinds of insecticidal plants and investigations of the active constituents of these are under way to isolate them and determine their constitution and properties. These active compounds or analogous ones may then be synthesized. An intensive study is being made of rotenone, a promising insecticide found in tropical plants and also in the devil's shoestring, a weed growing widely in this country. The synthesis of compounds closely allied to nicotine, the use of which as an insecticide is restricted by scarcity and consequent high prices is being studied and also the synthesis of organic compounds containing sulphur. Oil emulsions are being investigated to correlate their efficacy with physical and chemical properties. It is believed that the best chance of finding insecticides that are non-poisonous to man and that can serve as substitutes for lead arsenate lies in the synthetis organic field.

In the field of inorganic material attention is directed particularly toward the development of inorganic substitutes for Paris green and lead arsenate. Fluorine compounds offer many possibilities. They are cheap and readily available, and studies are being made of their preparation and properties and of the problems connected with their use. Arsenicals are still the most widely used insecticides and investigations on certain ones, such as calcium arsenate, are under way to determine ways of making this material uniform and eliminate certain features which make it objectionable. Investigations to develop suitable means for the effective removal of the residues from sprayed or dusted fruits and vegetables are also under way. The development of fungicides for the control of various fungous diseases, destructive to agricultural crops, is also being studied.

The activities under this appropriation are concerned with the chemical and physical phases of problems as opposed to entomological or pathological.

EMERGENCY FUNDS

Direct Allotments

Projects	Obligated, 1934	Estimated obligations, 1935
Public Works Allotments (National Industrial Recovery Act):		
Chemical phases of investigations on spray residue.....	$6,810	$53,190

(y) TRANSIT INSPECTION

Appropriation, 1932.	$ 42,800
Appropriation, 1933.	32,400
Appropriation, 1934.	30,229
Appropriation, 1935.	27,739 (a)
Budget Estimate, 1936.	29,059
Increase, Budget 1936, compared with Appropriation, 1935.	1,320 (b)

(a) Includes $1,320 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) $574 transferred from Bureau of Animal Industry; and (2) $746 from fund authorized by Sec. 21(e) of Act of March 28, 1934.

(b) Increase of $1,320 compared with 1935 appropriation consists of: 5% salary restoration, 1936 (to 100%)

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease: 5% Salary Restoration	Increase or decrease: Working Funds
Obligated:					
Transit Inspection....	$25,446	$27,739	$29,059	$1,320 (1)	---
Unobligated:					
Salary reduction impoundments.....	1,134	---	---	---	---
Other amounts unobligated.....	3,649	---	---	---	---
Total appropriation.....	30,229	27,739	29,059	+1,320	

(1) The increase of $1,320 is for 5% salary restoration, 1936 (to 100%).

WORK DONE UNDER THIS APPROPRIATION

The only means by which the Department can be assured that safeguards required under quarantine regulations are being followed in the case of mail, express and freight shipments, is to maintain a system of inspecting these products while in transit. This item provides for this work which consists of checking such shipments at important railway centers and transfer points. The importance of this work was emphasized in the summer of 1934 when transit inspectors found live Japanese beetles in cars of beans shipped from the infested area in New Jersey. These insects had entered the refrigerator cars in the process of loading and were active when the cars arrived at destination. The prompt discovery of this unexpected condition made it possible to enforce necessary additional safeguards at loading points and thus materially contribute to the prevention of the establishment of this pest at points far

removed from the infested area. Experience has shown that when the Department fails to check shipments at railroad centers and transfer points uninspected, untreated or uncertified products, which may be infested, are transported by common carriers into uninfested areas and thus threaten the establishment of these pests in such areas. The transit inspection service not only turns back several thousands of packages every year but it also serves to keep the employees of common carriers informed of quarantine requirements and thus obtains their active support in cooperating with the Department in its enforcement of Federal quarantines.

(z) FOREIGN PLANT QUARANTINES

Appropriation, 1932.	$ 799,130	
Appropriation, 1933.	737,970	
Appropriation, 1934.	685,000	
Appropriation, 1935.	597,461	(a)
Budget Estimate, 1936.	625,956	
Increase, Budget 1936, compared with Appropriation, 1935.	28,495	(b)

(a) Includes $16,000 reappropriated from unexpended balance of 1933 appropriation; and $28,495 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) $12,424 transferred from Bureau of Animal Industry; and (2) $16,071 from fund authorized by Sec. 21(e) of Act of March 28, 1934.

(b) Increase of $28,495 compared with 1935 appropriation consists of:

5% salary restoration, 1936 (to 100%)	+ $28,495
Increase in working funds for 1936	+ 480
Reduction: Offset of 1935 impoundment.....	- 480
	+ 28,495

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease: 5% Salary Restoration	Increase or decrease: Working Funds
Obligated:					
Import and permit service.....	$56,628	$55,348	$58,348	$3,000	---
Port inspection service.....	523,209	541,633	567,608	25,495	+$480(2)
Total obligations....	579,837	596,981	625,956	28,495(1)	+ 480
Unobligated:					
Salary reduction impoundments.....	28,607	---	---	---	---
Other legislative impoundments.....	3,343	480	---	---	- 480(3)
Other amounts unobligated.....	73,213	---	---	---	---
Total appropriation....	685,000	597,461	625,956	+ 28,495	

The increase of $28,495 for 1936 includes:

(1) An increase of $28,495 for 5% salary restoration, 1936 (to 100%).

(2) An increase of $480 in the project "Port Inspection Service," by release of funds impounded in 1935.

(3) A reduction of $480, offsetting 1935 impoundment.

CHANGE IN LANGUAGE

The change in this item merely drops the language providing for the reappropriation of $16,000 from the unexpended balance for the fiscal year 1933.

WORK DONE UNDER THIS APPROPRIATION

General. The work done under this subappropriation is for the continuance and maintenance of the work to prevent the entry into the United States of injurious insects and plant diseases by controlling and safeguarding the entry of plants and plant products. It involves the enforcement of (1) foreign plant quarantines and regulatory orders issued under the Plant Quarantine Act of 1912, as amended; (2) rules and regulations governing the entry into the United States of railway cars and other vehicles, etc., from Mexico; (3) the Act of 1905 governing the importation of living insects into the United States; and (4) regulations governing the shipment of plants and plant products to the mainland from Hawaii and Puerto Rico.

The activities are essential to protect the country from foreign plant pests and may be grouped into two main headings. One of these deals with authorizating the importation of plants or plant products which may enter the United States under the quarantines and regulatory orders. The other is concerned with inspections at ports of entry to detect and exclude dangerous plant pests and to see that plant material imported under permit meets the requirements of the authorization.

Import and Permit Service. The activities conducted under this project are concerned with the issuing of permits authorizing the entry of plants and plant products which can be imported without importing dangerous plant pests. It is necessary to limit the entry of plants and plant products to those which represent the least pest risk or to those which may be adequately safeguarded. Because of the impossibility of detecting certain types of plant diseases during the initial inspection, it is important in some cases that a further inspection be made in the field of certain imported plants. Plants and plant products imported into this country from abroad come under permit which gives a record of volume, nature of contents and destination and point

of origin. Inspection and, if necessary, disinfection or rejection of such commodities, takes place usually at port of entry except in the case of nursery stock which is inspected at certain designated points where facilities exist for the care of living plants during their inspection.

Port Inspection Service. The activities conducted under this project are for the purpose of protecting the United States from the entry of injurious insects and plant diseases. This project includes work at the maritime ports of entry, and the principal Mexican border ports of entry. Such work involves the inspection of ships, their cargoes, passengers' baggage, ships' stores, and the belongings of travelers entering this country at border ports of entry from Mexico; the supervision of treatment of products required as a conditions of entry; and other proceedings to prevent the entry of plant pests. It also includes the District of Columbia inspection service, which provides for examination and treatment, if necessary because of the pest risk involved, in order that domestic plant material entering or leaving the District may be inspected and certified to meet the requirements of States to which it is confined and to provide inspection and certification for that plant material imported and distributed by the United States Department of Agriculture. This work also includes the inspection and certification for movement to the mainland of plants and plant products permitted from the territory of Hawaii and also for the protection of Puerto Rico against the entry from foreign countries of injurious insects and plant diseases and to prevent the movement to the mainland of injurious insects and plant diseases known to occur in Puerto Rico.

(aa) CERTIFICATION OF EXPORTS

Appropriation, 1932	$ 30,300
Appropriation, 1933	20,200
Appropriation, 1934	18,558
Appropriation, 1935	16,991 (a)
Budget Estimate, 1936	31,862
Increase, Budget 1936, compared with Appropriation, 1935	14,871 (b)

(a) Includes $871 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) $389 transferred from Bureau of Animal Industry; and (2) $482 from fund authorized by Sec. 21(e) of Act of March 28, 1934.

(b) Increase of $14,871 compared with 1935 appropriation consists of:

5% salary restoration, 1936 (to 100%).....	+ $871
Increase in working funds for 1936	+14,000
	+14,871

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease: 5% Salary Restoration	Increase or decrease: Working Funds
Obligated:					
Certification of exports.....	$15,453	$16,991	$31,862	(1) $871	+$14,000(2)
Unobligated:					
Salary reduction impoundments.....	830	---	---	---	---
Other amounts unobligated.....	2,275	---	---	---	---
Total appropriation.	18,558	16,991	31,862	+ 14,871	

The increase of $14,871 for 1936 includes:

(1) An increase of $871 for 5% salary restoration, 1936 (to 100%).

(2) An increase of $14,000 in the project "Certification of Exports." This increase is needed to provide the inspection and certification of exports of fruits and vegetables to meet the sanitary requirements of foreign countries. Forty-one foreign countries now are requiring inspection and certification with respect to the presence of insects and plant diseases on fruit or other plant products imported from the United States. The American exporter is required to furnish a certificate indicating freedom from dangerous insect pests and plant diseases. The

demand for these certificates is increasing as indicated by the issuance of 3,371 in 1932, 5,766 in 1933 and 7,222 in 1934. It is evident that if American growers are to maintain their markets in foreign countries having these requirements, all shipments will have to be carefully inspected. The effect of these requirements is to interfere with the diversion of shipments enroute and hence there is a greatly increased demand on the part of shippers for certifications. The type of inspection required and the increased demand for this service, make it impossible to furnish the inspection with the funds available and it is essential that funds be increased in order that we may meet the demands of the exporters and inspect products in accordance with the sanitary requirements of the countries to which they are consigned.

WORK DONE UNDER THIS APPROPRIATION

The work done under this sub-appropriation is a service to the American exporters and consists of inspection and certification of fruit or other plant products to meet the sanitary requirements of the countries to which it is intended the products will be shipped. The inspection made is that necessary to issue the certificate required by the country of destination as a condition of entry. The work is carried on at various ports from which the products may be shipped. A nominal fee is charged for this work, proceeds being covered into the Treasury as miscellaneous receipts.

CHINCH BUG CONTROL

Appropriation, 1934	$ 1,000,000 (a)
Appropriation, 1935	------
Budget Estimate, 1936	------

(a) Provided by Act of June 7, 1934 (Pub. Res. 30, 73d Congress); made available until December 31, 1934.

PROJECT STATEMENT

	1934	1935 (Estimated)	1936 (Estimated)
Chinch Bug Control.....	$1,000,000	---	---

WORK DONE UNDER THIS APPROPRIATION

This appropriation was provided by Joint Resolution No. 30, 73d Congress, approved June 7, 1934, and made available authority and funds for cooperation with States in the control of chinch bugs by constructing barriers to prevent the bugs from migrating into

corn and certain other field crops. As soon as funds were available appropriate and satisfactory arrangements were made with the ten states in the area where chinch bugs occurred in destructive numbers and by June 9 consignments of barrier materials were enroute to destination points in certain states. Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, Ohio and Oklahoma participated in the cooperative control campaign and 6,041,536 gallons of creosote used for construction of barriers were purchased and transported to designated points in the chinch bug infested area. The cooperating State and local agencies were responsible for the local utilization and distribution of material from these points. Cooperating agencies have estimated that more than 1,200,000 acres of corn were saved by the use of creosote barriers. Adding to this the number of acres protected, the amount should be multiplied many fold. Using an average yield of 30 bushels per acre and an average price of 50¢, the corn saved in eight States, (excluding Missouri and Kansas), which participated in the control would be valued at $16,719,660. The subsequent drought somewhat obscured the full benefits of this cooperative effort to protect the growing crops.

In addition to giving protection to crops, the barriers killed untold numbers of chinch bugs. Combating chinch bugs by the use of barriers is, however, recognized as a protective rather than as a control measure. In spite of the construction of the barriers large numbers of chinch bugs reached maturity and produced a second generation. At a special conference with entomologists of cooperating States held in September 1934, plans were perfected for a survey to determine the status of the chinch bugs and to develop information as to numbers of chinch bugs which entered hibernation. As these notes are being prepared, results of this survey are not fully available. The preliminary information indicates, however, that larger numbers of chinch bugs are entering hibernation than in the fall of 1933 and that unusually large numbers of bugs occurred throughout the area infested this season and also in new sections along the border. If these preliminary results are confirmed and unless unfavorable weather conditions prevail during a short period in the spring, there would seem to be little doubt that the chinch bug will occur in outbreak numbers over even a larger area in the next crop season.

At this writing all accounts for freight on barrier materials have not been liquidated and an exact statement as to the unexpended balance cannot be made. It is evident, however, that when outstanding obligations have been paid the unexpended balance of this appropriation, which expires on December 31, 1934, will not exceed a few thousand dollars.

EMERGENCY FUNDS

Direct Allotments

Projects	Obligated, 1934
Public Works Allotments (National Industrial Recovery Act):	
Fencing railway car fumigation house reservation at Nogales, Arizona.....	$ 1,583
Repairing railway car fumigation house for treatment freight cars from Mexico to prevent pink bollworm spread at Nogales, Arizona.....	795
Fencing Railway car fumigation plant at Brownsville, Texas.....	1,091
Fencing railway car fumigation plant at Eagle Pass, Texas.....	1,361
Reroof Railway car fumigation house at Eagle Pass, Texas.....	1,723
Completing construction and installation of HCN volatilizer system in car fumigation house at Eagle Pass, Texas.....	1,798
Repairing railway car fumigation house at Eagle Pass, Texas.....	543
Fencing railway car fumigation plant at El Paso, Texas.....	1,927
Completing reroofing railway car fumigation at El Paso, Texas.....	400
Repairing railway car fumigation house at El Paso, Texas.	650
Completing construction and installation of HCN volatilizer system in railway car fumigation plant at El Paso, Texas.....	1,597
Reconstruct [illegible] 6 special gastight doors on car chambers of railway car fumigation house at El Paso, Texas.....	6,767

Projects	Obligated, 1934
Public Works Allotments (National Industrial Recovery Act):- Continued.	
Fencing railway car fumigation plant at Laredo, Texas.....	$ 1,769
Reconstruct 8 special steel gas-tight doors on car chambers of railway car fumigation house at Laredo, Texas.....	4,428
Plaster and Paint interior walls of railway car fumigation house at Laredo, Texas....	3,234
Repairing railway car fumigation house at Laredo, Texas.....	587
Construction and installation of an HCN Acid gas disposal system at the railway car fumigation house at Laredo, Texas.....	6,954
Repairing railway car fumigation house at Presidio, Texas.....	1,919
Fencing railway car fumigation house at Presidio, Texas.....	1,581
Repairing railway car fumigation house at Presidio, Texas.....	597
Construction of a fireproof railway car fumigation house on the site of the old house which was wrecked beyond repair by the storm of Sept. 4 and 5, 1933 at Brownsville, Texas.....	13,676
Total.....	54,980

Summary

Projects	Obligated 1934	Estimated, obligations, 1935
(1) Direct Allotments:		
Public Works allotments (National Industrial Recovery Act):		
West Indian Fruit Fly.....	$ 13,600	$ 22,400
Spray Residue Investigations...	42,000	61,215
Gipsy Moth Control.....	1,545,085	475,535
White Pine Blister Rust Control	879,762	1,170,238
Dutch Elm Disease Eradication..	74,000	6,000
Barberry Eradication.....	348,223	401,777
Chemical Phases of Investigation on Spray Residue.....	6,810	53,190
Physical Improvements.....	86,519	133,255
Total.....	2,995,999	2,323,610
Civil Works allotments (National Industrial Recovery Act):		
Citrus Canker Eradication.....	$ 1,450	- -
Phony Peach Eradication.....	5,950	- -
Extermination of Brown Tail Moths.....	3,834	- -
Dutch Elm Disease.....	12,500	- -
Sweet Potato Weevil Control....	850	- -
Control of Pest Mosquitoes.....	56,250	- -
Control of Ticks Carrying Human Diseases.....	1,675	- -
Total.....	82,509	- -
Loans and Relief in Stricken Agricultural Areas:		
Japanese Beetle.....	- -	65,000
Planting of Trees (Transferred from Forest Service).....	- -	10,000
Total.....	- -	75,000
Agricultural Adjustment Administration:		
Transfer from A.A.A. for special investigations of insect control relating to expansion of markets for tobacco.....	629	2,874
Total Direct Allotments	3,079,137	2,401,484

Projects	Obligated, 1934	Estimated Obligations, 1935
(2) Indirect Allotments:		
Emergency Conservation Work:		
Control of Insect Enemies of forests.....	16,637	47,363
Total, Emergency Funds.	3,095,774	2,448,847

PASSENGER-CARRYING VEHICLES

An increase from $12,750 to $38,375 is submitted in the passenger-carrying vehicle authorization for 1936. This rather substantial increase is due to the fact that shortage of funds during the past several years has made it impossible to replace motor equipment at a normal rate, with the result that during 1936 it will be necessary to replace a larger number of cars than usual if extensive repair costs or even complete abandonment of some equipment is to be avoided. Of the 63 cars desired, 58 are replacements, at an average net cost of $602. Five additions are planned at an average cost of $690. Two of these cars are needed by entomologists engaged in fruit insect investigations in the vicinity of Albany, Georgia, and Takoma Park, Maryland, respectively, whose duties require them to make very frequent visits to experimental orchards not accessible to public means of conveyance. Two cars will be used by supervisors of blister-rust control work in California and Washington. The travel of these men is performed for the most part in forested areas where common carrier service is not available. The fifth car is intended for the use of a supervisor of barberry eradication work in Illinois. The areas visited by this employee are so situated as to make the use of public transportation facilities impracticable.

At present most of the travel in the cases above outlined is performed in the employees' personally owned automobiles, at an allowance of 5 cents per mile. Since the average cost of operating the Bureau's official passenger-carrying cars is less than 2 cents per mile, there will be a worth-while operating economy in purchases like these, where the travel involved is heavy.

BUREAU OF BIOLOGICAL SURVEY

(a) GENERAL ADMINISTRATIVE EXPENSES

Appropriation, 1932.	$ 83,280	
Appropriation, 1933.	82,935	
Appropriation, 1934.	76,865	
Appropriation, 1935.	76,659	(a)
Budget Estimate, 1936.	79,595	
Increase, Budget 1936, compared with Appropriation, 1935.	2,936	(b)

(a) Includes $3,681 to cover 5% salary adjustment for 1935 (to 95%) as follows: (1) $1,601 transferred from Bureau of Animal Industry; and (2) $2,080 from fund authorized by Sec. 21 (e) of Act of March 28, 1934.

(b) Increase of $2,936 compared with 1935 appropriation consists of:

5% salary restoration, 1936 (to 100%)	+ $ 3,691
Reduction: Continuation of 1935 impoundment	- 50
Reduction by transfer to Interior Dept. for cleaning service	- 705
	+ 2,936

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease: 5% Salary Restoration	Increase or decrease: Working Funds
Obligated:					
General administration	$70,712	$76,609	$79,595	$3,691 (1)	-$705 (2)
Unobligated:					
Salary reduction impoundments.....	3,255	---	---	---	---
Other legislative impoundments.....	2,233	50	---	---	- 50 (3)
Other amounts unobligated.....	665	---	---	---	---
Total appropriation.....	76,865	76,659	79,595	+ 2,936	

The increase of $2,936 for 1936 includes:

(1) An increase of $3,691 for 5% salary restoration, 1936 (to 100%)

(2) A decrease of $705 by transfer to Department of the Interior for cleaning service.

(3) A reduction of $50, continuing 1935 impoundment.

WORK DONE UNDER THIS APPROPRIATION

The work under this appropriation relates chiefly to general administration under the Chief and Associate Chief of the Bureau; business administration including the handling of personnel matters, budget, and other matters pertaining to finances, bookkeeping, auditing of accounts, property, mail and files, securing of quarters, and coordination of divisional activities. This appropriation is necessary to provide for the payment of salaries, traveling and other expenses for the general administrative force of the Bureau and of the various units thereunder; for the purchase of supplies and equipment, and for the maintenance expenses of the various units.

(b) MAINTENANCE OF MAMMAL AND BIRD RESERVATIONS

Appropriation, 1932.	$ 101,830	
Appropriation, 1933.	82,313	
Appropriation, 1934.	75,000	
Appropriation, 1935.	54,736	(a)
Budget Estimate, 1936.	56,727	
Increase, Budget 1936, compared with Appropriation, 1935.	1,991	(b)

(a) Includes $2,368 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) $1,030 transferred from Bureau of Animal Industry; and (2) $1,338 from fund authorized by Sec. 21 (e) of Act of March 28, 1934.

(b) Increase of $1,991 compared with 1935 appropriation consists of:

5% salary restoration, 1936 (to 100%).....	+	$ 2,156
Reduction by transfer to Interior Dept. for cleaning service.....	-	115
Reduction: Continuation of 1935 impoundment.....	-	50
	+	1,991

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease: 5% Salary Restoration	Increase or decrease: Working Funds
Obligated:					
Bird refuges.....	$12,163	$16,470	$17,080	$ 725	-$ 115 (2)
National Bison Range (Mont.).....	6,653	7,288	7,586	298	---
Wind Cave Game Preserve (S.D.).....	5,202	5,248	5,453	205	---
Elk Refuge (Wyo.).....	18,555	15,246	15,786	540	---
Sullys Hill Game Preserve (N.D.).....	4,814	5,254	5,447	193	---
Niobrara Game Preserve (Nebr.).....	4,406	5,180	5,375	195	---
Total obligations.....	51,793	54,686	56,727	2,156 (1)	- 115
Unobligated:					
Salary reduction impoundments.....	2,601	---	---	---	---
Other legislative impoundments.....	250	50	---	---	- 50 (3)
Other amounts unobligated.....	20,356	---	---	---	---
Total appropriation.....	75,000	54,736	56,727	+ 1,991	

The increase of $1,991 for 1936 includes:
(1) An increase of $2,156 for 5% salary restoration, 1936 (to 100%).
(2) A decrease of $115 by transfer to Department of Interior for cleaning service.
(3) A reduction of $50, continuing 1935 impoundment.

WORK DONE UNDER THIS APPROPRIATION

General. The 90 wild life refuges administered by the Biological Survey under this appropriation have been selected primarily for their suitability for forms of wild life that have become greatly reduced in numbers or threatened with extinction and are located on areas affording nesting, feeding or resting grounds for water birds, or on which there are notable colonies of birds or mammals requiring protection. This number includes six big-game preserves on four of which herds of buffalo, elk and other big-game animals are maintained under fence. Hay is produced on the Elk Refuge near Jackson, Wyoming for the feeding of the elk herds that winter in that vicinity. The Charles Sheldon Wild Life Refuge in Nevada was established primarily for protection of the summer range of a large band of antelope. Sage hens and mule deer as well as other species of wild life occur on the area. The work carried on under the appropriation consists of general administration of the refuges, their patroling and posting, the construction of improvements thereon when funds are available, such as buildings, fences, reservoirs, watering places for animals, roads and trails, etc.; the repair of such improvements;

the raising of hay and feeding of big-game animals; removal of surplus animals; and restocking of areas through the transfer of big-game animals from other points. It is the responsibility of the Biological Survey to give protection to wild life on these refuges which have been established by Acts of Congress and Executive Orders and to carry out the purposes for which they were established--the perpetuation of species and the prevention of their extinction.

Bird Refuges.--Work under this project consists of administering areas that have been set aside primarily for bird refuges. Present available funds are only sufficient to provide full-time protector service at Big Lake, Arkansas, Lake Malheur, Oregon and at Tule Lake, Clear Lake, California and Upper Klamath Lake, Oregon which are administered as a unit and part-time protector service at Blackbeard Island, Georgia, and Savannah River, S. C. On several refuges seasonal protectors are employed during the hunting and nesting seasons but on the majority of refuges no protection is possible because of lack of funds for such purpose. Many of these refuges are the nesting or resting places for great numbers of ducks, geese, coots, swans, etc., while others contain heron rookeries and are the nesting sites for thousands of pelicans, gulls, terns, etc. The need for these refuges in preventing the extinction of various species is important and obvious.

National Bison Range, Montana.--This preserve which includes an area of 18,522 acres was established by Act of Congress primarily for the perpetuation of the American bison, or buffalo, which species was threatened with extinction. Herds of elk, deer and mountain sheep are also maintained for the benefit of the American public and for preserving these distinctive North American big-game animals for posterity. Great numbers of mallard ducks resort to the stream flowing through the Range and adjacent marshes. Ring-necked pheasants, native grouse and Hungarian partridges are also found on the preserve.

The animals are maintained as nearly as possible under natural conditions. Numerous buffalo, elk and some mule deer, considered surplus in the herds, have been removed during past years and distributed to various parks, zoos and game preserves. A considerable number of buffalo and elk have been turned over to Indian Reservations or sold for use as meat when it became necessary to reduce the herds in order to prevent overgrazing of the range and winter feeding. The surplus animals in the herds are administratively determined annually and are offered for disposal under competitive bids. Ample numbers of selected breeding animals are retained for the perpetuation of the species.

The following numbers of big-game animals are on the preserve:

Buffalo	530
Elk	141
Mountain sheep	60
Mule deer	108
White-tailed deer	29
Total	868

Wind Cave National Game Preserve, South Dakota.--This big-game preserve was established by Act of Congress under the plan to maintain a few herds of American bison, under Government supervision, at widely separated points, for the perpetuation of the species. It is located on Government-owned lands within the boundaries of Wind Cave National Park, near the Black Hills region of South Dakota. The site for this preserve was chosen by reason of its typical representation of the regions formerly occupied by the great herds of buffalo that formerly ranged over the Great Northern Plains. The original herd of buffalo at this preserve was a gift from the New York Zoological Society, through the American Bison Society, and was placed on the preserve in 1913. This buffalo herd is ranked in importance only by the one at the National Bison Range, Montana, of those under the jurisdiction of the Survey. In addition to the buffalo placed on this area, small herds of elk and antelope and also a few deer, are maintained at this point. Animals from this preserve also have been sold or donated to parks and zoos throughout the country, and, when necessary to curtail the herds in order to prevent overgrazing, numbers of animals have been sold for use as meat. Large numbers of tourists view this herd each year. The area under fence totals approximately 7,000 acres.

The following numbers of big-game animals are on this preserve:

Buffalo	258
Elk	58
Antelope	58
Mule deer	18
White-tailed deer	2
Total	394

Elk Refuge, Wyoming.--The Elk Refuge is maintained for the purpose of producing winter feed for thousands of elk that come to Jackson Hole each winter when forced out of adjacent mountains by deep snow and scarcity of food. The success with which the winter care of the elk has been carried on at this point has been the salvation of the Jackson Hole, or Southern, herd of elk and has been the chief factor in its perpetuation. The elk were formerly accustomed to winter much farther south, but settlement of the country and the introduction of domestic stock deprived the elk of this wintering ground and they found their way blocked and their winter range occupied by ranches. Consequently, large numbers of these animals perished each winter through starvation, notwithstanding the efforts of local residents to furnish them forage. The congestion of this elk herd and the lack of feed resulting in starvation and heavy losses during severe winters formed one of the most tragic situations in the annals of wild life conservation. It commanded National attention during the severe winters of 1909-1911 when Congress made special appropriations for the relief of the situation and adopted special legislation initiating the project. The feeding of the elk at the Refuge in the winter, with cooperation of the State authorities, has saved great numbers of the animals from starvation and is preventing their extinction in one of the last stands of these fine and typically American big-game animals.

Since the creation of this Refuge, the Federal Government has raised and harvested large quantities of hay each year for feeding the elk coming to the Refuge during severe winter weather. The Southern herd is estimated to number approximately 20,000 animals and the elk on the six feeding grounds

(three on the Refuge and three State feeding grounds in the region) totaled 11,239 animals when count was made in cooperation with the State Game Department in March, 1933. The welfare of these animals has been, and continues to be, the object of special studies by committees composed of Federal and State officials, and representatives of National conservation organizations. The Izaak Walton League of America, through popular subscription, raised sufficient funds for the purchase of a 1760-acre addition to this Refuge, the donation of which was accepted by special Act of Congress. This elk herd and the Northern Yellowstone herd are the only two great herds of elk remaining in the country and their welfare is a matter of National concern. The Elk Refuge includes an area of 4,520 acres and has also been made a bird refuge.

Sullys Hill Game Preserve, North Dakota.--This preserve (1,600 acres in area) is located on lands that were formerly established as Sullys Hill National Park but which have now been transferred to the jurisdiction of this department by Act of March 3, 1931. It contains small herds of buffalo, elk, antelope and a few deer. The lake within the preserve is frequented by various species of wild ducks during migration. Sullys Hill Game Preserve because of its recreational facilities and wild life is most attractive to tourists and the people of North Dakota and nearby States, 13,893 persons having visited the Preserve during 1933.

The following numbers of big-game animals are on the preserve:

Buffalo	25
Elk	46
White-tailed deer	10
Total	81

Niobrara Game Preserve, Nebraska.--This wild life preserve consisting of an area of 16,125 acres was established and is maintained to perpetuate bird life and game animals characteristic of the sandhill regions and plains of Nebraska. It is, therefore, important both as a game preserve and a bird refuge; also there is located at this point the third most important herd of buffalo administered by the Survey for the perpetuation of the species. Herds of elk and antelope, and a few deer also are maintained at this preserve. In the winter large numbers of wild ducks take refuge on the small ponds on the reservation as well as along the Niobrara River which runs through the reservation for a distance of about 9 miles. Native game birds including grouse, prairie chickens, ring-necked pheasants, and quail are found on the area. This preserve is the most conveniently located from the standpoint of availability to the public of any of our big-game areas. It affords an interesting educational feature in connection with the conservation of wild life for people of the region and tourists traveling the highway which crosses the preserve.

The following numbers of big-game animals are now on the preserve:

Buffalo	140
Elk	59
Antelope	12
White-tailed deer	3
Mule deer	1
Total	215

EMERGENCY FUNDS

Direct Allotments

Projects	Obligated 1934	Estimated Obligations 1935
Public Works Allotments (National Industrial Recovery Act):		
Bird Refuges -		
Construction of dikes, dams, and fillsfor water conservation; towers, cabins, and outbuildings at Big Lake Bird Refuge, Arkansas.....	$11,270	$58,230
Fencing nesting areas and locating and marking boundaries of Clear Lake Bird Refuge, Calif., and construction of tower at Tule Lake Refuge, California.....	4,596	2,854
Posting bird refuges in Florida, Louisiana, Michigan, Minnesota, Wisconsin, and Washington..	247	2,003
Construction of dikes and wells for water development, roads, bridges, tower, and telephone line at Blackbeard Island Refuge (Georgia).....	7,037	15,713
Locating and permanently marking boundaries of Deer Flat Refuge, Idaho, Minidoka Refuge, Idaho, Carlsbad Refuge, New Mexico, Strawberry Valley Refuge, Utah, Pathfinder Refuge, Wyoming, and various Oregon refuges.....	13,061	7,089
Construction of dikes for water control, boathouse, wharf, and towers at Savannah River Bird Refuge, South Carolina.....	5,496	9,504
Construction of headquarters and outbuildings, tower, stock fence, and water development at Charles Sheldon Wild Life Refuge, Nevada.....	15,838	15,162
National Bison Range, Mont. -		
Construction of roads and trails, towers, telephone lines, dam for water conservation; fire prevention; and repairs to buildings and fences.....	22,470	7,730
Wind Cave Game Preserve, South Dakota. -		
Construction of roads and trails, corrals, pasture, and fences and repairs to fences.....	7,210	290
Elk Refuge, Wyoming. -		
Repairs to buildings and fences; construction of roads, trails, and telephone lines; fire prevention system; and extension of irrigation system for production of winter feed for elk.....	19,650	2,350
Sullys Hill Game Preserve, North Dakota. -		
Completing dam for water conservation, developing water supply system; construction of roads, trails, and machine shed.....	18,580	5,420
Niobrara Game Preserve, Nebraska. -		
Construction of dams and wells for water development; fencing of pastures; fire prevention system; and repairs to buildings and fences..	36,091	4,409
Total	161,546	130,754

(2) Projects Financed Through other Government Agencies

Projects	Obligated, 1934	Estimated Obligations 1935
Emergency Conservation Work (Authorized by Act of March 31, 1933: Allotment through War Department: Work by Civilian Conservation Corps at Niobrara Game Preserve, Nebraska in construction of roads and trails, towers, fences, buildings; fire prevention; erosion prevention; and water development, etc.	$10,250	$14,603

(c) FOOD HABITS OF BIRDS AND ANIMALS

Appropriation, 1932	$ 72,960	(a)
Appropriation, 1933	70,970	(a)
Appropriation, 1934	52,800	(a)
Appropriation, 1935	55,774	(a) (b)
Budget Estimate, 1936	57,640	
Increase, Budget 1936, compared with Appropriation, 1935	1,866	(c)

(a) Excludes funds for "Investigation of methods of control for predatory animals and injurious rodents" which project is being transferred to subappropriation "Control of Predatory Animals and Injurious Rodents" in 1936.

(b) Includes $2,512 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) $1,510 transferred from Bureau of Animal Industry; and (2) $1,002 from fund authorized by Sec. 21(e) of Act of March 28, 1934.

(c) Increase of $1,866 compared with 1935 appropriation consists of:

5% salary restoration, 1936 (to 100%)	+ $ 2,441
Reduction by transfer to Interior Dept. for cleaning service	- 500
Reduction: Continuation of 1935 impoundment	- 75
	+ 1,866

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease 5% Salary Restoration	Working Funds
Obligated:					
Food habits of birds and animals.....	$50,536	$55,699	$57,640	$2,441 (1)	-$500 (2)
Unobligated:					
Salary reduction impoundments.....	2,210	---	---	---	---
Other legislative impoundments.....	---	75	---	---	- 75 (3)
Other amounts unobligated.....	54	---	---	---	---
Total appropriation....	52,800	55,774	57,640	+ 1,866	

The increase of $1,866 for 1936 includes:

(1) An increase of $2,441 for 5% salary restoration, 1936 (to 100%).

(2) A decrease of $500 by transfer to Department of Interior for cleaning service.

(3) A reduction of $75, continuing 1935 impoundment.

WORK DONE UNDER THIS APPROPRIATION

The investigations under this appropriation relate to (a) the agricultural significance of native and introduced birds and to a lesser degree of other land vertebrates; (b) improvement of methods and dissemination of knowledge thereof in the protection and increase of useful species and the control of injurious ones; (c) study of food habits and economic relationships of birds and animals; (d) study of the food resources of birds, possibilities of improvement and experimental work in this regard; (e) study of method of propagation of upland and aquatic game birds, and investigation and recommendations for proposed areas; (f) care of cage and ornamental birds and dissemination of knowledge pertaining to them.

Study of the food habits of birds and animals is a continuing one. Work of this nature was authorized by the first legislation March 3, 1885, establishing the organization which grew into the present Bureau of Biological Survey. Information subsequently revealed by research in this field is the basis for the code of bird protective laws and regulations in the United States which is the best for any country in the world. This information distributed not only by the Federal Department of Agriculture but by interested organizations such as the Audubon Societies, underlies the generally excellent public sentiment with regard to birds that prevails in the United States. While birds are chiefly beneficial, some species habitually and others sporadically cause damage. Requests for their investigation and control are regularly received. This work in reference to migratory birds is an obligation of the Federal Government under the Migratory Bird Treaty Act. Information is given in such cases as well as in a variety of other fields such as those of attract-

ing and increasing the numbers of wild birds and the care of cage and ornamental birds. To a lesser degree but one which must grow, studies similar to those made of birds are being made of mammals, particularly predatory animals, reptiles, and amphibians. All of these are services much appreciated by the people of the United States and fully justify the continuance and support of the work. The Biological Survey has been engaged for many years in the study of the propagation of game birds and the investigation of the qualifications of the environment for supporting the maximum number of aquatic and upland game birds and other species, together with the possibilities for improvement.

(d) CONTROL OF PREDATORY ANIMALS AND INJURIOUS RODENTS

Appropriation, 1932.	$ 625,180	(a)
Appropriation, 1933.	607,620	(a)
Appropriation, 1934.	552,200	(a)
Appropriation, 1935.	437,793	(a)(b)
Budget Estimate, 1936.	453,692	
Increase, Budget 1936, compared with Appropriation, 1935.	15,899	(c)

(a) Amount includes funds for "Investigation of Methods of Control for Predatory Animals and Injurious Rodents" which project is being transferred to this subappropriation in 1936 from the subappropriation "Food Habits of Birds and Animals."

(b) Includes $16,961 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) $6,961 transferred from Bureau of Animal Industry; and (2) $10,000 from fund authorized by Sec. 21(e) of Act of March 28, 1934.

(c) Increase of $15,899 compared with 1935 appropriation consists of:

5% salary restoration, 1936 (to 100%).....	+ $17,474
Reduction by transfer to Interior Dept.for cleaning service.....	- 600
Reduction: Continuation of 1935 impoundment.....	- 975
	+ 15,899

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease: 5% Salary Restoration	Increase or decrease: Working Funds
Obligated:					
Control of injurious rodents.....	$177,328	$187,033	$193,491	$ 6,758	- $300 (2)
Control of predatory animals.....	220,573	227,000	236,425	9,725	- 300 (2)
Investigation of methods of control for predatory animals and injurious rodents.....	20,403	22,785	23,776	991	---
Total obligations....	418,304	436,818	453,692	17,474 (1)	- 600(2)
Unobligated:					
Salary reduction impoundments.....	17,263	---	---	---	---
Other legislative impoundments.....	1,432	975	---	---	- 975 (3)
Other amounts Unobligated.....	115,201	---	---	---	---
Total appropriation....	552,200	437,793	453,692	+ 15,899	

The increase of $15,899 for 1936 includes:

(1) An increase of $17,474 for 5% salary restoration, 1936 (to 100%).

(2) A decrease of $600 by transfer to Department of the Interior for cleaning service.

(3) A reduction of $975, continuing 1935 impoundment.

CHANGE IN LANGUAGE

The insertion of the word "investigations" is recommended to cover the project "Investigation of Methods of Control for Predatory Animals and Injurious Rodents" which was left under the subappropriation "Food Habits of Birds and Animals" when a separate subappropriation for "Control of Predatory Animals and Injurious Rodents" was established in the fiscal year 1932. The failure to include this project in the appropriation item has occasioned considerable confusion when predatory animal and rodent work have been discussed before the Budget Bureau and at Congressional hearings. It is, therefore, proposed that funds for this project be added to the item for "Control of Predatory Animals and Injurious Rodents" for the fiscal year 1936 and appropriations and expenditures for previous fiscal years have been shown on a comparable basis in the foregoing statements.

WORK DONE UNDER THIS APPROPRIATION

General. The work under this appropriation consists of cooperation and demonstrations in the control of predatory animals and injurious rodents which are a serious menace to live stock, wild game, grazing lands, farm crops, fruit and forest trees, and stored agricultural products, as well as public health. Cooperative operations for the control of predatory animals and injurious rodents are carried on with Federal, State, County, and private agencies. Demonstrations and advice on the best methods of controlling predatory animals and injurious rodents are given to public agencies and individuals. A ten-year program for the control of predatory animals and injurious rodents was contemplated by the Act approved March 2, 1931 (46 Stat. 1468; U.S.C. Supp. title 7, sec. 426) which authorized annual appropriations of $1,000,000 for the fiscal years 1932-1941 for this work.

In order to meet reduction in appropriations for the fiscal year 1934, it was necessary that the Biological Survey reduce its field force to a skeleton basis. In addition to the supervisory employees it has been possible to carry only a few hunters and other temporary employees on the federal payroll. The supervisory group has been used to carry on the cooperative control campaigns financed by states, counties, livestock organizations, and individuals, and to supervise the rodent control work made possible by the emergency program.

Due to the reduction in both federal and cooperative funds available for the employment of hunters, together with the fact that private hunters have reduced their efforts because of low prices for furs, predatory animals have greatly increased in numbers. Any further decrease in federal funds would seriously jeopardize the work now being carried on by the small force of employees maintained under the existing appropriations. This would permit of a further increase in predators and rodents and require excessive expenditures in the future to again secure a reasonable degree of control.

The Federal Government has a definite obligation in the control of injurious rodents and predatory animals on the unreserved public domain as well as the other federal lands such as national forests and Indian reservations which are a constant source of infestation and reinfestation of adjoining cultivated and grazing private lands. In practically every district in the west where control operations are necessary they are conducted on a unit basis, whereby infested state, federal, and private lands within the unit are treated simultaneously under cooperative agreement.

Control of Injurious Rodents.--Under this project cooperative field operations are conducted for the control of injurious rodents that cause serious depredations on grazing lands, farm crops, fruit and forest trees, and stored agricultural products, as well as being a menace to public health by carrying such diseases as bubonic plague, tularemia, typhus and spotted fever. Also under this project field operations are conducted on National forest and other public lands in the control of injurious rodents that cause serious injury to grazing lands and forest trees. It is important that this work be continued in order to carry forward the projects now under way, an interruption of which at present would cause enormous loss to agricultural interests and nullyfy to a large extent the progress which has been made in bringing the injurious rodents under control.

Control of Predatory Animals.--Under this project in cooperation with State, County and private agencies, operations are carried on for the control of predatory animals that inflict heavy losses to livestock and wild game. Losses are especially severe at this time due to the fact the reductions in appropriations by cooperators and the Federal government have thrown many hunters out of employment while private trappers have taken few predatory animals for their furs due to low fur prices, thus causing an abnormal increase in these animals. It is important that this work be continued in order to carry forward the cooperative work now under way to keep the losses by predators as low as possible, the interruption of which at present would cause enormous loss to live stock industries and would cause serious loss to the Government of investments made in perfecting an organization to effectively carry on the work.

Investigations of Control Methods.--Under this project investigations are carried on to determine effective methods for the control of injurious rodents and predatory animals and to determine the fitness of various poisons and fumigants for use in the control of these pests. Special poisons are prepared for use in the field in control operations. Continuation of this work is essential to bring to satisfactory completion investigations which have been undertaken and promise satisfactory results.

EMERGENCY FUNDS

Direct Allotments

Projects	Obligated, 1934	Estimated, obligations 1935
Public Works Allotment (National Industry Recovery Act; transferred from Forest Service):		
Rodent control on national forests.....	$ 197,421	$ 98,679
Civil Works Allotment:		
Rodent control in connection with typhus control in Alabama, Georgia, and Texas.....	169,117	---
Loans and Relief in Stricken Agricultural Areas (transferred from Forest Service):		
Rodent control in connection with establishment of a shelterbelt.....	---	10,000
Total, direct allotments.....	366,538	108,679

(e) PRODUCTION OF FUR-BEARING ANIMALS

Appropriation, 1932.	$ 64,360
Appropriation, 1933.	62,455
Appropriation, 1934.	55,000
Appropriation, 1935.	54,071 (a)
Budget Estimate, 1936.	56,112
Increase, Budget 1936, compared with Appropriation, 1935.	2,041 (b)

(a) Includes $2,354 to cover 5% salary adjustment for 1935 (to 95%), as follows: (1) $1,024 transferred from Bureau of Animal Industry; and (2) $1,330 from fund authorized by Sec. 21(e) of Act of March 28, 1934.

(b) Increase of $2,041 compared with 1935 appropriation consists of:

5% salary restoration, 1936 (to 100%).....	+ $ 2,291
Reduction by transfer to Interior Dept. for cleaning service.....	- 200
Reduction: Continuation of 1935 impoundment.....	- 50
	+ 2,041

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease: 5% Salary Restoration	Increase or decrease: Working Funds
Obligated:					
Investigations of fur animals.....	$12,839	$14,207	$14,778	$ 671	- $100 (2)
Fur-Animal Experiment Station (New York)...	14,154	13,950	14,482	532	---
Rabbit Experiment Station (California).	9,779	10,157	10,582	425	---
Disease Investigation.	14,637	15,707	16,270	663	- 100 (2)
Total obligations.....	51,409	54,021	56,112	2,291 (1)	- 200 (2)
Unobligated:					
Salary reduction impoundments.....	2,223	---	---	---	---
Other legislative impoundments.....	1,164	50	---	---	- 50 (3)
Other amounts unobligated.....	204	---	---	---	---
Total appropration.....	55,000	54,071	56,112	+ 2,041	

The increase of $2,041 for 1936 includes:

(1) An increase of $2,291 for 5% salary restoration, 1936 (to 100%).

(2) A decrease of $200 by transfer to Department of Interior for cleaning service.

(3) A reduction of $50, continuing 1935 impoundment.

WORK DONE UNDER THIS APPROPRIATION

General. The work under this appropriation consists of research in connection with the production, conservation and utilization of fur animals, including rabbits for meat and fur. Methods employed in the production of fur farms and protected areas are investigated and studies are made of methods of breeding, feeding and handling fur animals in captivity on farms. Research is conducted in the diseases of fur animals and rabbits to ascertain causes and develop methods of treatment and prevention so as to minimize losses to breeders from such causes. A fur-animal experiment station is operated near Saratoga Springs, N. Y., and a rabbit experiment station is maintained at Fontana, Calif. From the results of studies conducted at these stations recommendations are made for the guidance of fur farmers and fur tradesmen.

Investigations of fur animals.--The major work under this project consists of planning, outlining, developing, and conducting investigational and research work in the study of the production and conservation of fur animals, including economic problems of management and operation; the establishment and maintenance of cooperation with various organizations and institutions interested in such studies; supervising the analysis, interpretation, and preparation for publication of the material assembled in connection with fur resources; and the dissemination of reliable information for the protection of investors in breeding stock.

Fur-Animal Experiment Station, New York.--Work under this project is chiefly research in feeding, breeding, and handling fur animals in captivity. Experiments are conducted with various species to determine the most satisfactory methods of raising fur animals in captivity; ascertaining conditions under which the various species can be raised profitably and produce good fur; developing improved strains by selective breeding; and learning the breeding, gestation, whelping, and prime-fur periods. The major portion of the work at this station for the past three years has been confined to breeding and feeding problems and the economy of producing fur in captivity. Since it is recognized that the factors limiting success in fur farming are concerned with keeping costs of production sufficiently below the sale price of raw pelts, much attention has been given to the kinds of food and methods of feeding best adapted to bring this about. Continuation of the work is essential not only to complete investigations now in progress, but to obtain definite and conclusive facts on various phases of fur-animal production that are not available at present.

Rabbit Experiment Station, California.--Work under this project consists in determining the best methods of producing rabbits for food and fur, all energies being directed to producing meat and fur of fine quality, insuring sanitary surroundings and preventing diseases and parasites. This is a cooperative undertaking with the Fontana Farms Company and the local rabbit breeders' organization. The equipment furnished by the Fontana Farms Company includes a five-acre tract of orange grove, administration building, with offices and accomodations for laboratories, various open and closed types of houses for shelter, hundreds of hutches, a sprinkler system to cool houses in hot weather, a residence for the director and his family. The Government provides for salaries, labor, feed, experimental pens, equipment and other operating expenses of the station. The rabbit breeders donated the original stock comprising white and red New Zealand, blue and white American, Flemish, and Chinchilla, French Silver, Havana, American sable, and Polish rabbits. When the experiment station was established at Fontana, Calif., in 1927, facilities were provided for maintaining 140 breeding animals. At the present time there are facilities for 550 animals, not including the rearing and developing pens which house approximately 150 rabbits. The continuance of the work of the station is of very great importance to the rabbit breeders of the country. The activities of the station are concerned chiefly with the gathering of facts affecting those engaged in the production of domestic rabbits for food and fur. Closely cooperating with the station are the Fontana Farms Company, National and State organizations, and scientific societies and institutions, as well as agricultural colleges, whose object is to develop rabbit raising.

Disease Investigations.-- The work under this project consists mainly in investigations of diseases of fur animals and diseases of rabbits. Fur farmers are constantly appealing to the Federal Government for aid in checking the outbreaks of disease which annually take a heavy toll from their stock and on frequent occasions reduce these enterprises from profitable undertakings to losses. Numerous fur farms have been forced into bankruptcy because of disease outbreaks. Owners of trapping lands have demonstrated that diseases peculiar to these species as well as others acquired from domestic stock are directly responsible for reducing the quality as well as the numbers of these species. Laboratories are maintained at Washington, Minneapolis, and Fontana for disease studies, and research is conducted in conjunction with cooperating institutions for the reduction of abnormal losses in fur animals. Continued work in this field is essential in order that the fur resources of the country will not be seriously depleted.

EMERGENCY FUNDS

Direct Allotments

Projects	Obligated 1934	Estimated Obligations 1935
Public Works allotments (National Industrial Recovery Act):		
Fur-animal Experiment Station, N.Y.- Construction of pens, feed storage buildings, and repairs to pens and fences	$5,734	$ 716
Rabbit Experiment Station, California- Construction of pens, hutches, feed storage building, and repairs to hutches and pens	6,151	349
Blackwater Refuge Experiment Station, Maryland - Construction of pens, fences, and buildings	5,356	644
Total, P. W. A.	17,241	1,709
Civil Works Project:		
Telegraph charges in connection with supervision of civil works projects at experiment stations	16	---
Total, direct allotments	17,257	1,709

(f) BIOLOGICAL INVESTIGATIONS

Appropriation, 1932	$128,315 (a)
Appropriation, 1933	102,500
Appropriation, 1934	85,000

Appropriation, 1935	73,143 (b)
Budget Estimate, 1936	76,149
Increase, Budget 1936, compared with Appropriation, 1935	3,006 (c)

(a) Includes $45,205 for muskox and reindeer investigations, which projects were transferred to this subappropriation in fiscal year. 1933 from the subappropriation "Reindeer, Game, Fur-Bearers in Alaska."

(b) Includes $3,432 to cover 5% salary adjustment for 1935 (to 95%) as follows: (1) $1,493 transferred from Bureau of Animal Industry; and (2) $1,939 from fund authorized by Sec. 21 (e) of Act of March 28, 1934.

(c) Increase of $3,006 compared with 1935 appropriation consists of-

5% salary restoration, 1936 (to 100%).....	+ $3,481
Reduction by transfer to Interior Department for cleaning service.....	- 475
	+ 3,006

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease: 5% Salary Restoration	Increase or decrease: Working Funds
Obligated:					
Investigations of wild animal life.....	$41,290	$ 41,938	$ 43,776	$ 2,113	-$275 (2)
Research in forest wild life.....	15,088	15,065	15,738	673	-
Reindeer investigations	9,762	10,700	11,168	468	-
Muskox investigations..	7,829	5,240	5,467	227	-
Total obligations.....	73,969	72,943	76,149	(1) 3,481	- 275
Unobligated:					
Salary reduction impoundments.....	3,574	---	---	---	---
Other legislative impoundments.....	3,504	200	---	---	-200 (3)
Other amounts unobligated.....	3,953	---	---	---	---
Total appropriations...	85,000	73,143	76,149	+ 3,006	

The increase of $3,006 for 1936 includes:

(1) An increase of $3,481 for 5% salary restoration, 1936 (to 100%).

(2) A net reduction of $275 consisting of (a) a decrease of $475 by transfer to Department of Interior for cleaning service, and (b) an increase of $200 for cooperative work in broadening the distribution of wild life knowledge and practices (made possible by release of 1935 impoundment).

(3) A reduction of $200 offsetting 1935 impoundment.

WORK DONE UNDER THIS APPROPRIATION

General. Field and laboratory investigations are made of the distribution, migration, classification, life history, and relations of wild animals and birds, and of the natural life zones of the Continent. This work provides a sound basis of scientific fact required for use in the regulatory, economic, educational and other work of the Bureau. It includes special study of the relationships of wild life to forest and grazing ranges, including investigations of game and fur-bearing animals as sources of profit on marginal or other lands and in Alaska investigations of reindeer, caribou, and muskoxen, and of the forage resources of the Territory. Its continuance is essential as a basis for effective conduct of the scientific, educational, control, and regulatory work of the Bureau.

Investigations of wild animal life. -- The wild life of the country constitutes a natural asset of great value, but includes also destructive forms which cause heavy losses to agriculture, forestry, and livestock production. Reliable information regarding the habits, and distribution, and accurate determination of species concerned are essential to efficient administration and to progress in scientific undertakings for which the Bureau is responsible. Work under this project is so conducted as to make available accurate identification service and reliable information to guide the Biological Survey and all other agencies concerned with the administration of wild life resources, including control, conservation and use. The extensive collections of birds and mammals are used for reference and comparison and in scientific work on taxonomy, distribution, and life zone problems, specimens of species involved in scientific, control, and regulatory work are identified and material is prepared as memoranda and for publication as needed for scientific, educational and administrative purposes. The scientific work under this project is of fundamental importance to all phases of the Bureau's service and educational program.

Research in forest wild life.-- Work under this project is authorized by the McNary-McSweeney Act (45 Stat. Pub. 689, Chapter 678). This fundamental work on the relation of wild life to forests, grazing ranges and watersheds includes determination of ways and means for production on forest lands of valuable species of game and fur-bearing animals and investigations of beneficial or harmful relationships of these and other animal forms to forest and range production and protection of watersheds. Destructive activities of rodents and predatory animals

and birds and the compensating beneficial habits are thoroughly studied and analyzed. The abundance, distribution, movements, and habits, of wild life forms occurring on the forest and range areas are under intensive study based on collections, live trapping, controlled experiments, and field observations, coupled with accurate identification of all species involved. The relation of sapsuckers, woodpeckers, or other birds, bats, shrews, mice and other animals, which feed upon destructive forest insects, or plant parasites, the value of birds and mammals as distributors of seeds of forest trees, and their possible agency in destroying or distributing plant diseases, also are under careful investigations. Vigorous prosecution of this investigational program is essential to profitable administration, development, control and use of wild life occurring on forest and range lands, and to adoption of sound management practices in respect thereto.

Reindeer investigations.--The work under this project is of the utmost practical importance in determining the value of Alaskan grasses, browse plants and lichens for the grazing of reindeer, caribou, and muskoxen, or other animals, and in working out range practices under which sustained yield may be maintained and satisfactory grazing allotments made to herd owners. The industry is vital to the social and economic welfare of the people of Alaska as a source of food and clothing. Feeding investigations in progress with reindeer are serving to disclose conditions under which local feed supplies may be utilized profitably in the rearing and management of reindeer. Other investigations have brought to light many important measures for improved handling and management of the reindeer and to protect them from parasites and diseases. Cross-breeding experiments with reindeer and caribou have resulted in production of fertile hybrid animals of greater weight and conformation better suited for meat production purposes. These superior animals and the breeding principles established will be used for general herd improvement in the Territory. Continuance of these investigations is essential to guide developments of the reindeer industry in the Territory along sound, profitable lines.

Muskoxen investigations.--Under an appropriation made available during the fiscal year 1931, the Department was successful in securing 34 muskoxen from northeast Greenland, and placing them at the Biological Survey experiment station at College, Alaska. The animals are now under care with a view to determining possibilities for increase of their numbers by natural reproduction as one of the wild life attractions of the Territory, and a source of meat supply for the population. Several of the animals have now reached breeding age and this year 7 calves were born of which 5 survive in excellent condition. Experiments are also being conducted designed to determine essential facts regarding their habits, and to devise methods of handling and feeding which may increase their value as an economic resource. A considerable demand has arisen for their wool to be used locally in making jackets, scarfs, and socks which because of their lightness and warmth are particularly desirable for use in the arctic climate. Continued work is required to accomplish the objectives contemplated in the original appropriation providing for reintroduction of muskoxen into Alaska.

EMERGENCY FUNDS

Direct Allotments

Projects	Obligated 1934	Estimated, obligations, 1935
Public Works Allotments (National Industrial Recovery Act):		
Construction of headquarters and field laboratory for biological studies at Flagstaff and Continental, Arizona.....	$2,796	$804

(g) PROTECTION OF MIGRATORY BIRDS.

Appropriation, 1932	$ 220,120
Appropriation, 1933	214,240
Appropriation, 1934	198,190
Appropriation, 1935	161,464 (a)
Budget Estimate, 1936	167,978
Increase, Budget, 1936 compared with Appropriation, 1935	6,514 (b)

(a) Includes $6,379 to cover 5% salary adjustment for 1935 (to 95%) as follows: (1) $2,775 transferred from Bureau of Animal Industry; and (2) $3,604 from funds authorized by Sec. 21(e) of Act of March 28, 1934.

(b) Increase of $6,514 compared with 1935 appropriation consists of:

5% salary restoration, 1936 (to 100%).....	+$ 6,674
Reduction: by transfer to Interior Department for cleaning service.....	- 160
	+ 6,514

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or Decrease: 5% Salary Restoration	Increase or Decrease: Working Funds
Obligated:					
Migratory Bird Treaty Act.....	$113,597	$115,891	$120,988	$4,857	+ $240 (2)
Investigations of migratory birds.	34,388	31,673	32,990	1,317	- - -
Lacy Act.....	11,341	13,500	14,000	500	- - -
Total obligations	159,326	161,064	167,978	(1)6,674	+ 240
Unobligated:					
Salary reduction impoundments..	5,781	---	---	---	---
Other legislative impoundments..	11,038	400	---	---	- 400 (3)
Other amounts unobligated...	22,045	---	---	---	---
Total appropriation	198,190	161,464	167,978	+ 6,514	

The increase of $6,514 for 1936 includes:

(1) An increase of $6,674 for 5% salary restoration, 1936 (to 100%).

(2) A net increase of $240, consisting of (a) a reduction of $160 by transfer to Department of Interior for cleaning service, and (b) an increase of $400 for more adequate enforcement of the Migratory Bird Treaty act (made possible by release of 1935 impoundment).

(3) A reduction of $400 offsetting 1935 impoundment.

WORK DONE UNDER THIS APPROPRIATION

General. The purpose of this appropriation is the enforcement of the Migratory Bird Treaty Act passed by Congress July 3, 1918 to carry into effect the treaty with Great Britain for the protection of birds migrating between the United States and Canada, and the enforcement of Sections 241, 242, 243 and 244 of the Act of March 4, 1909 and the administration of Section 1 of the Act of May 25, 1900.

Work under the Migratory Bird Treaty Act includes the determination of open or closed seasons for migratory game birds and the maintenance of a force of game protectors throughout the country for the protection of migratory game and nongame species. Investigations are made of the abundance, migratory movements, and conditions which affect ducks, geese and other migratory birds protected under the Migratory Bird Treaty Act.

The Act of March 4, 1909 prohibits the importation into the United States of birds and mammals which may be injurious to agriculture or horticulture; provides for regulating the entry of other foreign wild mammals and birds into this country, and prohibits the transportation in interstate commerce by common carrier of game killed or shipped in violation of local laws.

Migratory Bird Treaty Act.-- Work under this project which involves the enforcement of the regulations under the Migratory Bird Treaty Act for the protection of birds migrating between the United States and Canada is essential for agricultural interests as well as for sport, food, and recreation, and should be continued indefinitely. Had it not been for the enactment of this law, which prohibits spring shooting, sale of game, snaring of game, and similar destructive practices, and provides for a uniformity of laws for the protection of migratory birds throughout the country, many of our more valuable migratory insectivorous song and game bird species would soon be greatly reduced in numbers or exterminated. The drainage or destruction otherwise, of large areas throughout the country which were formerly used as breeding and resting places for migratory wild fowl, has caused a proportionately increased concentration of birds on the remaining wild fowl habitats in the United States. As a result, hunters whose numbers have increased greatly during the past decade,

have found it easier each year to locate large numbers of wild fowl for hunting purposes. The ncessity for more rigid enforcement of the Migratory Bird Treaty regulations has increased accordingly.

Investigations of Migratory Birds.-- Work under this project consists of investigations of the abundance, migratory movements and conditions which affect ducks, geese and other migratory fowl protected under the Migratory Bird Treaty Act. The work includes special field investigations throughout the United States and on important breeding grounds in Canada; banding operations to secure specific information regarding migration routes and the influence of the more important breeding grounds and concentration areas on the waterfowl supply throughout the country, also the work of hundreds of cooperators throughout the United States and Canada in reporting information secured as a result of their observations. The effects of settlement, drainage, agricultural operations and drought conditions over a large part of the most important breeding areas of ducks in the northern United States and in the prairie provinces of Canada are studied to secure information needed for effective administrative action in providing adequate protection and favorable conditions for the breeding stocks of these valuable game birds. The work under this project is required to furnish reliable and up-to-date information which serves as a basis for intelligent administration of provisions under the Migratory Bird Treaty Act as well as for the informational work which must be done to enlist public support of the Department's regulations and to promote constructive conservation policies and programs.

Lacy Act.-- Work under this project is chiefly regulatory, involving the enforcement of the Act of March 4, 1909 passed by Congress to prohibit the importation of wild birds and mammals which may be injurious to agriculture or horticulture, and to enforce the provision prohibiting the transportation in interstate commerce by common carrier of game killed or shipped in violation of local laws. The inspection service maintained at principal ports for the purpose of stopping the introduction of injurious species into this country is vital to the welfare of the farmer and horticulturist and this work should be continued indefinitely. The suppression of illegal interstate shipments of wild animals or parts thereof is of great benefit to the various States and goes far toward assisting in the maintenance of a supply of fur-bearing animals. The records of fur dealers, express companies, etc. are examined for the purpose of obtaining evidence of such illegal shipments with a view to prosecution. If it were not for the vigilance of the Federal personnel engaged in this particular work, the maintenance of an adequate supply of beaver and other highly valuable fur- bearing animals would be greatly endangered. Continuation of this phase of the work is, therefore, very necessary.

EMERGENCY FUNDS

Direct Allotments

Projects	Obligated, 1934	Estimated Obligations, 1935
Public Works Allotments (National Industrial Recovery Act):		
Construction of seven boats for patrol work in enforcement and administration of the Migratory Bird Treaty Act.....	$4,703	$32,593

(h) ENFORCEMENT OF ALASKA GAME LAW

Appropriation, 1932	$ 110,445	(a)
Appropriation, 1933	103,566	
Appropriation, 1934	90,000	
Appropriation, 1935	69,196	(b)
Budget Estimate, 1936	71,596	
Increase, Budget 1936, compared with Appropriation, 1935	2,400	(c)

(a) Funds for this project were appropriated under "Reindeer, Game and Furbearers in Alaska." A separate subappropriation was set up in fiscal year 1933.

(b) Includes $2,598 to cover 5% salary adjustments for 1935 (to 95%) as follows: (1) $1,130 transferred from Bureau of Animal Industry; and (2) $1,468 from fund authorized by Section 21(e) of Act of March 28, 1934.

(c) Increase of $2,400 compared with 1935 appropriation consists of -

5% salary restoration, 1936 (to 100%).....	+ $2,600
Reduction: Continuation of 1935 impoundment.....	- 200
	+ 2,400

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease: 5% salary Restoration	Increase or decrease: Working Funds
Obligated:					
Enforcement of Alaska Game Law..	$61,044	$68,996	$71,596	(1)$2,600	---
Unobligated:					
Salary reduction impoundments.....	2,365	---	---	---	---
Other legislative impoundments.....	---	200	---	---	- $200(2)
Other amounts unobligated.....	26,591	---	---	---	---
Total appropriation.	90,000	69,196	71,596	+ 2,400	

The increase of $2,400 for 1936 includes:

(1) An increase of $2,600 for 5% salary restoration, 1936 (to 100%).

(2) A reduction of $200, continuing 1935 impoundment.

WORK DONE UNDER THIS APPROPRIATION

The enforcement of the Alaska Game Law of January 13, 1925 (U.S.Code, Title 48, secs. 192-211), as amended by the Act of February 14, 1931 (46 Stat. 1111 - U.S.Code, Supp., Title 48, secs. 192-207), is committed to the Alaska Game Commission, which is composed of four resident members of Alaska, appointed by the Secretary of Agriculture, and the Chief Representative of the Biological Survey stationed in the Territory, who is the Executive Officer of the Commission. The duties of the Commission are to administer the law and to enforce its provisions and the regulations thereunder adopted by the Secretary of Agriculture.

The work has been administered through 10 warden districts prior to last fiscal year when reduction in funds required the dismissal of three wardens and consolidation of the work in 7 warden districts. Fifty percent of the receipts from licenses, fines and forfeitures is covered into the Treasury of the United States as miscellaneous receipts and the balance is turned over to the Treasury of the Territory for the Territorial school fund, as provided in the Alaska Game Law.

The wild life of Alaska constitutes one of the Territory's major resources. Its conservation and perpetuation is of vital importance to Alaskans particularly to the native Indians and Eskimos who are in large measure dependent upon it, and of great interest to conservationists and lovers of wild life, not only in various sections of continental United States but also in foreign countries, particularly Canada. Alaska contains the last great stand of wild life under the jurisdiction of the United States, but it can soon be dissipated unless it is carefully guarded aginst waste and exploitation.

EMERGENCY FUNDS

Direct Allotments

Projects	Obligated, 1934	Estimated, Obligations, 1935
Public Works Allotments (National Industrial Recovery Act):		
Construction of floats, docks, and storehouses for use of Alaska game wardens in the enforcement and administration of the Alaska Game Law	$ 116	$ 8,879
Construction of headquarters buildings at Chitina, Dillingham, Fortuna Ledge, Kodiak, Kenai, and McGrath for use of Alaska game wardens	258	24,902
Construction of six boats for patrol work by Alaska game wardens and for the administration and enforcement of the Alaska Game Law	140,331	21,214
Total, P.W.A. funds	140,705	54,995

(i) UPPER MISSISSIPPI RIVER WILD LIFE REFUGE

Appropriation, 1932	$197,780
Appropriation, 1933	79,478
Appropriation, 1934	61,700
Unexpended balance carried forward for 1933 for land acquisition	28,755
Total available, 1934	90,455
Appropriation, 1935	35,144 (a)
Unexpended balance brought forward from 1934 for land acquisition	29,917
Total available, 1935	65,061
Budget Estimate, 1936	36,626
Decrease, Budget 1936, compared with Funds available, 1935	- 28,435 (b)

(a) Includes $1,349 to cover 5% salary adjustment for 1935 (to 95% as follows: (1) $587 transferred from Bureau of Animal Industry; and (2) $762 from fund authorized by Sec. 21(e) of the Act of March 28, 1934.

(b) Decrease of $28,435 compared with total available for 1935 consists of:

5% salary restoration 1936 (to 100%)	+ $1,482
Reduction: Unexpended balance brought forward from 1934	- 29,917
	- 28,435

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease: 5% Salary Restoration	Increase or decrease: Working Funds
Obligated:					
Administration	$30,490	$33,282	$34,683	$1,401	- - -
Acquisition of land	16,093	31,779	1,943	81	-$29,917(2)
Total obligations	46,583	65,061	36,626	(1)1,482	- 29,917
Unobligated:					
Salary reduction impoundments	1,898	---	---	---	---
Other legislative impoundments	3,073	---	---	----	---
Other amounts unobligated	38,901	---	---	---	---
Total appropriation	90,455	65,061	38,626	- 28,435	

The decrease of $28,435 for 1936 includes:

(1) An increase of $1,482 for 5% salary restoration, 1936 (to 100%).

(2) A decrease of $29,917 in the project "Acquisition of land" as the unexpended balance carried forward from the previous fiscal year will be exhausted in 1935.

WORK DONE UNDER THIS APPROPRIATION

General. This activity was initiated by special Act of Congress under date of June 7, 1924, which authorized an appropriation of $1,500,000 to carry out its provisions. The acquisition of lands is authorized in the over-flow area of the Mississippi River in the States of Illinois, Iowa, Minnesota and Wisconsin, between Rock Island, Ill., and Wabasha, Minn., a distance of approximately 300 miles, for the purpose of establishing a refuge for wild animals and birds, and for the conservation of wild flowers and aquatic plants, under the Department of Agriculture, and as a refuge and breeding place for fish and other aquatic animal life, under the Department of Commerce. Land acquisition has proceeded as rapidly as possible under the price limitations of the Act and reduction in appropriation. The work incident thereto includes

the examination and valuation of the lands, negotiations with tract owners for the purpose of arriving at satisfactory agreements, the examination of titles and boundary surveys of the lands being acquired. At the close of the fiscal year 1935 approximately 145,912 acres will have been acquired for refuge purposes. The lands are placed under administration for the purposes of the Act as rapidly as acquisitions permit the consolidation of satisfactory units for economical administration. This year seventeen such units totalling 16,370 acres of land and 1,145 acres of meandered water are being administered as inviolate sanctuaries for wild life. These areas are posted against trespass. The public is permitted to make restricted use of the remaining Federal owned lands in the project for recreational and other purposes. The refuge is patrolled for the protection of wild life and the prevention of trespass and for the detection and suppression of forest fires, together with the supervision of special uses authorized by permits or otherwise. This refuge has abundantly demonstrated its suitability for the purposes intended.

Upper Mississippi River Wild Life Refuge - Administration
(Headquarters, Winona, Minn.)

The administration of this project includes the supervision and patrol of the area to protect the wild animals and birds and plant life within its boundaries, to detect and suppress forest fires therein, and to supervise the exercise of authorized privileges in the refuge by individuals or the public. These functions require the maintenance and operation of a variety of land and water craft and equipment to attain the desired objects. Boundaries of the refuge are surveyed, marked and posted as rapidly as funds will permit after acquisition of the land. The area is posted throughout with fire warnings and trespass notices. Reforestation and the planting of food producing trees, shrubs, vines, etc., are also practiced.

Upper Mississippi River Wild Life Refuge - Acquisition of Land.

Notwithstanding the curtailment of financial provisions for land acquisition, there will continue to be a need for supervision incident to those acquisitions recently made through the process of condemnation and also because of the close relationship established with the War Department involving lands that are now or that may later be affected by the 9-foot channel project. This relationship will extend for an indefinite period.

Of the total of $1,500,000 authorized for this project, $890,395 has been appropriated up to and including the ficsal year 1935.

Direct Allotments

Projects	Obligated, 1934	Estimated, obligations, 1935
Public Works Allotments (National Industrial Recovery Act):		
Locating and permanently marking refuge boundaries to prevent trespass and construction of fire lines.....	$11,861	$25,339

(j) BEAR RIVER MIGRATORY BIRD REFUGE

Appropriation, 1932	$19,900
Appropriation, 1933	32,100
Appropriation, 1934..	20,000
Unexpended balance carried forward from 1931 for acquisition of land.. . . .	812
Total available, 1934.	20,812
Appropriation, 1935	15,938 (a)
Budget Estimate, 1936	16,559
Increase, Budget 1936, compared with Appropriation, 1935	621 (b)

(a) Includes $619 to cover 5% salary adjustment for 1935 (to 95%) as follows: (1) $269 transferred from Bureau of Animal Industry; and (2) $350 from fund authorized by Sec 21 (e) of Act of March 28, 1934.

(b) Increase of $621 compared with 1935 appropriation consists of 5% salary restoration, 1936 (to 100%).

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease: 5% Salary Restoration	Increase or decrease: Working Funds
Obligated:					
Administration.....	$14,919	$15,938	$ 16,559	$ 621	---
Acquisition of land...	164	---	---	---	---
Total obligations....	15,083	15,938	16,559	(1) 621	- - -
Unobligated:					
Salary reduction impoundments.....	581	---	---	---	---
Other amounts unobligated.....	5,148	---	---	---	---
Total appropriation.....	20,812	15,938	16,559	+ 621	

(1) The increase of $621 for 5% salary restoration, 1936, (to 100%).

WORK DONE UNDER THIS APPROPRIATION

This project was inaugurated under special legislation of April 23, 1928, by Congress (U.S. Code Supp. IV, Title 16, Secs. 690-690h), to eliminate the death trap for waterfowl and other migratory birds that had long existed in the bay at the mouth of Bear River, Great Salt Lake, Utah. Establishment of this refuge, which includes marsh and water areas totalling 64,255 acres, was advocated by game officials, sportsmen, and other conservationists from every section of the United States. It is one of the most important breeding, feeding and concentration areas for ducks, geese, and shorebirds, in the West. Ducks banded by the Biological Survey cooperators on these marshes have been recovered in 14 States in the Great Basin and Rocky Mountain region and in Canada and Mexico. To increase the usefulness of the refuge and to prevent losses from botulism, river-control works and feeder canals have been constructed. The massive outer and division dikes provide for the fresh-water flooding, of approximately 28,000 acres in five units. Formal administration of the refuge became effective October 1, 1933. Forty percent of the flooded area was designated as public shooting grounds as permitted by Act of Congress of April 23, 1928, establishing the refuge. The remainder is administered as an inviolate sanctuary.

Administration of the refuge includes the maintenance of the outer and division dikes, the operation and maintenance of the river control works, construction and repair of roads and guard cabins, the patrolling and protection of the refuge, and planting and seeding of vegetation for the production of food and nesting sites for birds.

This project is of vital concern to our resources in waterfowl and other migratory birds in the eleven States west of the Rocky Mountains.

EMERGENCY FUNDS

Direct Allotments

Projects	Obligated, 1934	Estimated obligations, 1935
Public Works Allotments (National Industrial Recovery Act):		
Construction of administration building, tool house, telephone lines, towers, fencing, and roads...	$18,782	$5,718
Construction of dikes for water conservation, dressing dikes and graveling dikes and beach lines.....	29,846	3,654
Total.....	48,628	9,372

(2) Projects Financed through other Government Agencies.

Projects	Obligated, 1934	Estimated obligations, 1935
Emergency Conservation Work (Authorized by Act of March 31, 1933; allotment through War Department): Work by Civilian Conservation Corps in construction of buildings, towers, fencing, trails, bridges, levees; water improvement; erosion protection; repairs to buildings, dikes, etc.....	------	$35,150

(k) MIGRATORY BIRD CONSERVATION REFUGES

Appropriation, 1932	$ 405,000
Appropriation, 1933	318,000
Appropriation, 1934	89,525
Appropriation, 1935	65,015
Budget Estimate, 1936	67,510
Increase, Budget 1936, compared with Appropriation, 1935	2,495 (b)

(a) Includes $2,596 to cover 5% salary adjustment for 1935 (to 95%) as follows: (1) $1,129 transferred from Bureau of Animal Industry; and (2) $1,467 from funds authorized by Sec. 21 (e) of Act of March 28, 1934.

(b) Increase of $2,495 compared with 1935 appropriation consists of-

5% salary restoration, 1936 (to 100%)...	+ $2,720
Reduction by transfer to Interior Department for cleaning service.	- 225
	+ 2,495

PROJECT STATEMENT

Projects	1934	1935 (Estimated)	1936 (Estimated)	Increase or decrease 5% Salary Restoration	Increase or decrease Working Funds
Obligated:					
Administration of migratory bird conservation refuges	$12,800	$18,892	$19,657	$ 765	-
Investigation of food resources of migratory bird refuge areas	5,728	5,723	5,968	245	-
Disease investigations	4,598	4,900	5,100	200	-
Examination, surveys, and acquisition of refuge land	35,350	35,500	36,785	1,510	- 225(2)
Total obligations	58,476	65,015	67,510	(1)2,720	- 225
Unobligated:					
Salary reduction impoundments	1,806	-	-	-	-
Other legislative impoundments	1,786	-	-	-	-
Other amounts unobligated	27,457	-	-	-	-
Total appropriation	89,525	65,015	67,510	+ 2,495	

The increase of $2,495 for 1936 includes:

(1) An increase of $2,720 for 5% salary restoration, 1936 (to 100%).

(2) A decrease of $225 by transfer to Department of Interior for cleaning service.

WORK DONE UNDER THIS APPROPRIATION

General. The migratory Bird Conservation Act of February 18, 1929 (U.S.C. Supp. IV, title 16, secs. 715-715r) authorized a 10-year program for the establishment of a national system of refuges for the conservation and perpetuation of waterfowl and other migratory game birds. Of the $3,875,000 authorized to be appropriated including the fiscal year 1935 $1,146,411 has been appropriated, $1,000,000 is authorized to be appropriated for the fiscal year 1936. Work under this appropriation includes the maintenance and administration of refuge areas acquired under this Act and the development of such areas and other refuges; the elimination of loss of migratory birds from alkali poisoning, oil pollution or other causes; the study of food resources of refuge areas and improvement of food and cover; and the acquisition of land and water for migratory bird refuges throughout the United States.

Administration of Migratory Bird Conservation Refuges. This

project involves the administration of refuges acquired or established under the Migratory Bird Conservation Act of February 18, 1929. Full time supervisors are now provided at the Blackwater Refuge, Maryland, area 8,500 acres; Cape Romain Refuge, South Carolina, area 55,000 acres; Swanquarter Refuge, North Carolina, area 42,948 acres; St. Marks Refuge, Florida, area 35,000 acres; Crescent Lake Refuge, Nebraska, area 42,000 acres, and Benton Lake Refuge, Montana, 12,000 acres. Extensive water areas are connected with the Blackwater, St. Marks, and Swanquarter Refuges and the operation and maintenance of boats are necessary in the care and administration of these areas. These Refuges were established primarily as breeding, resting, and feeding areas for migratory waterfowl. Extensive developments and improvements have been made at each of these points under NIRA allotments and with the aid of C.C.C. Camps. (See Emergency Funds at end of this item; also statement of land purchases from Emergency Conservation, and other emergency allotments in connection with the Migratory Waterfowl Program, following the appropriation "Migratory Bird Conservation Fund").

Investigation of Food Resources of Migratory Bird Refuge Areas. The selection of areas suitable for federal migratory bird refuges is based on reports of investigations under this project as to their biological fitness. Possibilities of improvement of acquired areas also are studied and recommendations are made so that the refuges shall be as efficient as possible. Both of these activities are definite obligations of the federal migratory bird refuge program and should be continuously maintained. Investigations and recommendations of improving wild-life habitats and food resources of other areas are also made.

Diseases Investigations. During recent years widespread concern has developed among State conservation officials and sportsmen because of the annual loss of hundreds of thousands of valuable waterfowl and game birds. There is increasing evidence that a large portion of the bird life of this country never fulfills its economic function because of early deaths from some form of disease such as may be caused by infectious organisms, parasites, and poisoning and pollution.

These losses are very evident in the gradually increasing shortage of game birds in the southern States and the periodic or cyclic disappearance of important species of game birds and animals in the northern States. The excessive waste of migratory birds on the extensive western alkaline lakes requires extended study in order that practical control measures may be worked out. Game farms established by State conservation departments, hunting clubs, and private individuals have made progress, but are handicapped by serious epizootics which often destroy a high percentage.

It has been demonstrated that some of the more virulent diseases of game birds are transmissible from other species, such as the insectivorous and seedeating song birds. Certain of their diseases are also transmissible from wild animals.

The bureau has endeavored to prevent as far as possible the wastage of wild life on public lands and is carrying out research on the causative factors responsible for these losses. All of this work is being conducted in conjunction with State institutions and private individuals, who through their cooperation furnish funds, equipment, and experimental birds and animals. This work should be continued in order that the findings up to the present may not be lost to the detriment of wild life on government domain, and the cooperating agencies who control areas where wild life is being depleted. Many States have signified a desire to cooperate in these studies with the bureau.

Examination, Surveys and Acquisition of Refuge Land. Heretofore the major activities have been directed toward the accumulation of essential basic data on prospective refuge sites and boundary locations essential to consummation of certain acquisitions. Approximately 4,000,000 acres of land have been examined in 141 units throughout the United States. These data will be reduced to final form by the limited qualified personnel. The Division will be occupied as time and resources permit in the examination of areas of public domain believed suited for refuge purposes. During the fiscal year 1935 the Division has been principally occupied in supervising with its limited permanent force a large program of public works projects which seriously interfered with the ordinary work of the Division under this appropriation. During the fiscal year 1936 water development projects consummated under the Public Works program and by the Reclamation Service will open a field for essential investigations to determine the wisdom of setting apart such places for refuges under the provisions of the Migratory Bird Conservation Act and without expenditure of funds for land acquisition.

The engineering branch of the Division will be occupied in compiling essential map data resulting from refuge boundary surveys now in process as PWA projects and will also be engaged in the location and demarcation of boundaries on established refuges and those in the process of establishment. Water supply studies looking to the development, impoundment, and conservation of water to enhance the value of established refuges are now in process and will continue during the coming fiscal year. It is also the responsibility of this Division to furnish whatever engineering data may be required in addition to the great volume of such data previously compiled for the suit pending before the Supreme Court of the United States to determine the land ownership status of the Malheur Reservation in Oregon. There are also certain lands ownership problems pending on the Bear River Refuge in Utah that must be worked out by this Division.

- EMERGENCY FUNDS

(1) Direct Allotments

Projects	Obligated, 1934	Estimated obligations, 1935
Public Works Allotments (National Industrial Recovery Act):		
Locating and permanently marking refuge boundaries at Salt River Refuge, Arizona....	$ 2,612	$ 1,788
Surveys for dikes and fills for water conservation at Salton Sea Refuge, Calif.	11,254	2,746
Wrecking surplus buildings and remodeling administration building at Widows Island Refuge, Maine.....	9,784	216
Improvements to headquarters building at Blackwater Refuge, Maryland.....	853	147
Locating and marking refuge boundaries and fencing nesting areas at Benton Lake Refuge, Montana.....	2,719	6,531
Construction of dams for water control, fencing nesting areas, and construction of headquarters building and outbuildings at Crescent Lake Refuge, Nebraska.....	14,622	6,378
Water Development and conservation at Railroad Valley Refuge, Nevada.....	4,765	28,235
Construction of boat for use at Swanquarter Refuge, North Carolina.....	193	4,757
Posting Long Lake Refuge, N. D.	892	37
Surveys for water development and conservation at Salt Plains Refuge, Okla.	13,784	366
Construction of boat for use at Cape Romain Refuge, S.C., and towers, boathouses, and wharf.....	2,034	8,791
Total, direct allotments(P.W.A.)...	63,512	59,992

(2) Projects Financed through other Government Agencies.

Projects	Obligated, 1934	Estimated obligations, 1935
Emergency Conservation Work: (Authorized by Act of March 31, 1933, allotment through War Department):		
Work performed by Civilian Conservation Corps in the construction of roads, trails, towers, buildings, fences, telephone lines, bridges; water conservation and development; fire prevention, erosion prevention repairs to buildings and roads, etc. at the following Migratory Bird conservation Refuges:		
Blackwater Refuge, Md.....	$18,009	$ 22,765
Crescent Lake Refuge, Nebr.....	6,440	17,731
St. Marks Refuge, Florida.....	46,805	-
Swanquarter Refuge, N. C.....	42,322	27,600
Total, indirect allotments	113,576	68,096

(1) ADVANCES TO MIGRATORY BIRD CONSERVATION FUND

Appropriation, 1934-35.....$150,000
Budget Estimate, 1936..... - - -

The sum of $150,000 was appropriated in the Deficiency Appropriation Act, 1934, as an advance for expenses of administration and enforcement of the Federal Hunting Stamp Act, to be repaid to the Treasury from the first $150,000 of revenue accruing in the Migratory Bird Conservation Fund from the sale of stamps. The cost of administration and enforcement for the fiscal year 1936 will be met, as provided by the Federal Hunting Stamp Act, from ten per cent of the proceeds received from the sale of stamps.

(m) MIGRATORY BIRD CONSERVATION FUND

Estimated Receipts, 1935 . . . . . $750,000
Estimated Receipts, 1936 750,000

PROJECT STATEMENT

Projects	1935 Estimated	1936 Estimated
Administration of Hunting Stamp Act and Migratory Bird Treaty Act.....	(1)$150,000	$ 75,000
Acquisition, development, and maintenance of migratory bird refuges.....	600,000	675,000
Total.....	750,000	750,000

(1) This amount must be repaid to the Treasury from the first $150,000 collected under the Hunting Stamp Act to offset the amount advanced in the Deficiency Act 1934-35 for this purpose.

The Federal Hunting Stamp Act. (Public No. 124, 73rd Congress), approved March 16, 1934, provides for the sale at post offices of Federal hunting stamps at a cost of one dollar for each fiscal year, to be affixed to the State licenses of persons hunting migratory waterfowl, or to certificates furnished by the Postmaster. Ninety percent of funds secured from the sale of these stamps is to be used for the acquisitions of areas for use as migratory bird sanctuaries, refuges, and breeding grounds, and for the development, maintenance, and administration of migratory-bird conservation refuges; ten percent of the funds is to be used for the administration of this Act and the Migratory Bird Treaty Act. After June 30, 1936, this permanent appropriation becomes an annual appropriation, in accordance with provision of Section 4 (b29) of Public 473 - 73rd Congress.

MIGRATORY WATERFOWL PROGRAM
EMERGENCY FUNDS

Projects Financed Through
other Governmental Agencies

Projects	Estimated obligations, 1935
Emergency Conservation Work (Authorized by Act of March 31, 1933; funds transferred by War Department to Department of Agriculture):	
For the purchase or rental of land for migratory bird and other refuges as authorized by Executive Order No. 6724 of May 28, 1934:	

Projects	Estimated obligations, 1935
California	$160,000
Illinois	50,000
Montana	40,000
Nebraska	30,000
North Dakota	500,000
Ohio	125,000
South Dakota	75,000
Reserved for areas examined but from which final selection has not been made	20,000
Total, E. C. W. Allotment	1,000,000
Submarginal Land Acquisition (Authorized in allotment of $25,000,000 by the P.W.A. to the Federal Surplus Relief Corporation):	
For the purchase of submarginal land for migratory-bird and other wild-life refuges:	
Arkansas	154,000
Missouri	135,000
North Carolina	319,500
Ohio	75,000
Oregon	675,000
Reserved for areas examined but from which final selection has not beem made	141,500
Total, submarginal Land allotment	1,500,000
Drought Relief Land Acquisition (Authorized from grant of $12,500,000 to the Federal Emergency Relief Administration from the Deficiency Bill Appropriation):	
For the purchase of land in drought relief areas for migratory bird and other wild life refuges:	
Michigan	175,000
Minnesota	250,000
Montana	270,000
Nebraska	186,000
North Dakota	1,550,000
South Dakota	440,000
Washington	24,177
Wisconsin	30,000
Reserved for areas examined but from which final selection has not been made	574,823
Total, Drought Relief Land allotment	3,500,000
Total, All land purchase allotments, migratory waterfowl Program	6,000,000

Direct Allotment

Projects	Estimated obligations, 1935
Emergency Relief and Public Works (Authorized by the President from funds appropriated in Title II of the Deficiency Act):	
For the improvement of migratory bird and other wild life refuges acquired under the migratory waterfowl program as authorized by Executive Order No. 6766 of June 29, 1934:	
Arizona	5,000
Arkansas	30,500
Georgia	7,256
Illinois	20,000
Michigan	105,000
Minnesota	130,000
Montana	152,100
Nebraska	60,800
Nevada	11,490
North Carolina	25,000
North Dakota	1,177,950
Oregon	14,500
South Carolina	25,350
South Dakota	277,300
Utah	29,800
Wisconsin	7,000
Reserved for improvements on areas not yet selected	420,954
Total, Emergency Relief allotment	2,500,000
Grand Total, Migratory Waterfowl Program	8,500,000

WORK DONE UNDER THESE FUNDS

The Migratory Waterfowl Program embraces the acquisition and development of waterfowl refuges on the breeding grounds and flyways for which purposes eight and one-half million of dollars have been provided for various relief and emergency appropriations. The acquisition program is now well advanced. Options have been secured for more than 400,000 acres and it is hoped that this amount will be more than doubled before the project is completed. A considerable proportion of this acreage is in the Northern Plains States, and includes large areas formerly occupied as breeding grounds by several migratory waterfowl species most favored by hunters. In this region it is planned to restore at least 300,000 acres of water and marsh areas. If the depleted

waterfowl population can be successfully built up on this great natural breeding ground from which the birds formerly migrated to almost every part of the country, the program will benefit the waterfowl situation of both the Mississippi Valley and the Atlantic Coast. Other breeding areas to be acquired in the Northwestern States will benefit the Pacific Coast region.

The average size of these refuges will be in excess of 20,000 acres, and in most of these projects there are many owners, so that the negotiations for the acquisition of the tracts desired involve a vast amount of work and some difficulty in reaching early and satisfactory price agreements.

As these areas are acquired they will be developed by the construction of dikes, ditches and by other means impound or stabilize water and improve environmental conditions. Headquarters will be constructed for refuge keepers, fences will be erected where necessary, refuges posted against trespass, food and cover planted as required and other work performed necessary to facilitate the administration of these refuges and to make them more attractive to wild fowl.

EMERGENCY FUNDS - BUREAU TOTAL

Summary

Projects	Obligated, 1934	Estimated, obligations 1935
(1) Direct allotments:		
(a) Public Works Allotments (National Industrial Recovery Act):		
Maintenance of mammal and bird reservations	161,546	$ 130,754
Control of predatory animals and injurious rodents	197,421	98,679
Production of fur-bearing animals	17,241	1,709
Biological investigations	2,796	804
Protection of migratory birds	4,703	32,593
Enforcement of Alaska game law	140,705	54,995
Upper Mississippi River wild-life refuge	11,861	25,339
Bear River migratory-bird refuge	48,628	9,372
Migratory-bird conservation refuges	63,512	59,992
Total, P.W.A.	648,413	414,237
(b) Civil Works projects:		
Rodent control	169,117	---
Production of fur-bearing animals	16	---
Total, C.W.A.	169,133	---

Projects	Obligated, 1934	Estimated, obligations 1935
(c) Loans and Relief in Stricken Agricultural Areas:(Transferred from Forest Service): Rodent control in connection with establishment of shelterbelt area...	---	10,000
(d) Emergency Relief and Public Works: Improvement of migratory-bird and other wild-life refuges.....	---	2,500,000
Total, Direct Allotments	817,546	2,924,237
(2) Indirect allotments (financed through other Government agencies):		
(a) Emergency conservation work:		
Maintenance of reservations (work by C.C.C. at Niobrara, Neb., preserve).	10,250	14,603
Bear River Migratory bird refuge (work of C.C.C.).....	---	35,150
Migratory-bird conservation refuges (C.C.C. work).....	113,576	68,096
Migratory-bird conservation fund (purchase or rental of land for migratory-bird and other wild-life refuges).....	---	1,000,000
Total, E.C.W.....	123,826	1,117,849
(b) Submarginal land acquisition (out of allotment by P.W.A. to Federal Surplus Relief Corporation.....	---	1,500,000
(c) Drought Relief Land acquisition (out of Federal Emergency Relief Administration allotment, for purchase of land in drought-relief areas for migratory-bird and other wild-life refuges).....	---	3,500,000
Total, Indirect Allotments	123,826	6,117,849
Total, Emergency Funds.....	941,372	9,042,086

PASSENGER-CARRYING VEHICLES.

No purchases of additional passenger-carrying automobiles are requested, but only authorization for expenditure of sufficient funds to replace cars now in operation but which will during the fiscal years 1935 and 1936 have had sufficient use so that it will be more economical to exchange them for new cars than to pay the increased operating expenses which depreciated motor equipment necessitates. A decrease in authorization from $14,450 to $13,825 is estimated.

In carrying on the field activities of the Bureau it is necessary with much of the work to cover long stretches of territory considerable portions of which are inaccessible by other means of transportation. The Government-owned automobiles has been found the most economical means of transportation and a great time saver. It has also been found a less expensive means of transportation when travel is extensive than to allow mileage rates to employees for use of their personally-owned automobiles as Government cars can be operated cheaper than privately-owned cars. Because of these facts the Bureau several years ago inaugurated a policy of furnishing Government-owned cars for use of employees when the travel was sufficiently extensive to effect a real saving thereby.

Although the field service is now equipped with passenger-carrying cars it is necessary in the continuation of this policy to keep the equipment in satisfactory running condition which requires cars to be replaced every two or three years on an average, depending upon the mileage covered and conditions under which operated.